The Lumleian Lectures

ON

THE COMPREHENSIVE STUDY OF THORACIC PHTHISIS.

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LECTURE II.[1]

Delivered on March 18th, 1902.

II.—MORBID ANATOMY: PATHOLOGICAL CHANGES.

MR. PRESIDENT AND GENTLEMEN,—In connexion with this part of my subject my main purpose is to attempt a comprehensive summary, on practical lines, of the actual morbid conditions or pathological changes which *may* be met with in different cases of thoracic phthisis. Nowadays it is imperatively necessary, having regard to the vague ideas prevalent as to what consumption really means, to emphasise the fact at the very outset that they are positive and definite enough and that the disease is not merely an invasion of our lungs by tubercle bacilli. It is often impossible to make people understand that these organs become the seat of destructive lesions, the tendency of which is to be progressive, and that we have only two of them. The consequence is that they expect a "cure" in the most extreme and hopeless cases, and will try any vaunted remedy or course of treatment, even when there is hardly a shred of pulmonary tissue left.

But the next point to be brought into prominence is that other structures besides the lungs are almost constantly involved, at any rate in cases of any duration, and that the actual changes are of different kinds, while they present much variety in their nature, extent, and combinations in different instances. The morbid product which we call "tubercle" is an essential part of thoracic phthisis, and the well-known changes which this material undergoes in itself, as well as those which it sets up in the involved structures, especially lesions of a necrotic or destructive nature, constitute in the ordinary run of cases its most prominent anatomical manifestations.

Seat of origin.—Before proceeding further it may be well to offer a few remarks regarding the seat of origin of thoracic phthisis, or the structures and situations from which it starts. In the large majority of cases the disease is definitely *pulmonary* at its commencement and as a rule it begins in one lung, though both may be involved from the first or from an early period. Moreover, it is a familiar fact that the vicinity of the apex is the chosen site from which tuberculosis usually starts. This primary localisation is, however, by no means always met with and phthisis may first be revealed as a basic lesion or in some more central area of the lung; or it may be from the outset more or less diffused or disseminated.

There is a very definite class of case in which the mischief obviously commences in the *main air-passage*, especially the *larynx*, and involves the lungs secondarily in different ways. The *pleura* is also an important structure from which thoracic phthisis may originate. Apart from the effects of pleuritic conditions already mentioned as predisposing to, or laying the foundation for, pulmonary changes of a phthisical nature, primary tuberculosis of the pleura, with consequent pleurisy, constitutes a definite and characteristic group of cases, the lungs becoming subsequently affected. Sometimes the complaint seems to be both pleuritic and pulmonary from the outset. Possibly the *pericardium* may be first attacked but I have never met with an instance. Undoubtedly thoracic phthisis as an active process may originate in the *mediastinal glands* and this event is, I believe, more frequent than is usually supposed, more particularly in young patients. It has been maintained that infection of these glands always takes place through the lungs but there may certainly be no preceding obvious tuberculous mischief in these organs, or it is confined to a very limited focus. I have met with a few cases in which the primary lesion was *superficial* in the form of disease of the bones or cartilages forming the chest-wall, or of extensive glandular lesions, the mischief afterwards extending internally. The *diaphragm* is liable to be the first structure affected when tuberculosis spreads directly from the abdomen to the thorax.

Once the pathological processes concerned in thoracic phthisis have gained a footing in any structure, the natural tendency is for them to spread to others in succession and often progressively, owing to their intimate anatomical relations and their connexions through the circulation and absorbent system. Their advance in different instances may be very rapid, or steadily progressive, or slow and gradual. When the pulmonary tissues are once involved, whether primarily or secondarily, further extension in the same lung, as well as in the opposite one, may easily take place in ways which are well known.

SUMMARY OF MORBID CONDITIONS.

With these preliminary observations I now proceed to give a comprehensive summary or *résumé* of the actual morbid processes and changes which in various combinations constitute the pathological manifestations of thoracic phthisis and which we must always be prepared to recognise and study in individual instances. Certain of these conditions may be regarded as more or less essential parts of the phthisical process or lesions; others are secondary and may or may not occur; while still others are accidental, or may be quite independent of the complaint, though contributing to the clinical history in the cases where they happen to be present. They may be conveniently discussed in relation to the several structures which they implicate—namely: A.—Lungs—Pulmonary Phthisis. B.—Main Air-tubes. C.—Pleura and Pleural Cavity. D.—Pericardium, Heart, and Vessels. E.—Mediastinal Structures. F.—Thoracic Walls and Diaphragm.

A.—Lungs—Pulmonary Phthisis.

The lungs being obviously by far the most important structures concerned in thoracic phthisis in the large majority of cases demand the first consideration, and all possible pathological changes associated with these organs in such cases ought to be clearly understood. I do not think that I am exaggerating when I affirm that a prevalent tendency, even when the fact is recognised that phthisis does present definite structural lesions, is to sum up the whole matter in a casual way by saying that consumption is a disease of the lungs which passes through the three stages of tuberculous deposit or consolidation, softening, and the formation of cavities. The actual conditions for which we have to be prepared are, however, by no means so simple, and I now proceed to endeavour to elucidate them.

1. The formation of tubercle is, of course, as already intimated, an essential and fundamental part of pulmonary phthisis. The amount and extent of this product, however, as well as its arrangement and distribution, vary greatly in different cases. Thus it may be in the form of the well-known "miliary tubercles" or "grey granulations," quite distinct, and either limited to a small area, or more or less diffused or disseminated in one or both lungs, sometimes throughout. In other instances these granulations are aggregated together to form definite groups; or the tubercle may take the form of an infiltration, involving the lung more or less extensively, and rendering the affected area practically solid.

2. But, secondly, associated with the tuberculous process, and as a part of the primary consolidation, there is in a large proportion of cases a pneumonic change, usually of the broncho-pneumonic or catarrhal type, and whether we regard it as due to the action of the tubercle bacilli or their toxins, or to that of other organisms, there it is, and it constitutes a very definite and important pathological factor in acute, subacute, and chronic cases. It often extends far beyond areas which are the seat of demonstrable tubercle and may involve a whole lobe or lung rapidly, being then practically indistinguishable from ordinary pneumonia in general characters. More frequently the pneumonic condition is more localised or disseminated, being of lobular distribution, and obviously associated with tuberculous foci. Of course,

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pneumonia may further occur as a complication in cases of chronic phthisis, either clearing up afterwards or contributing to the advance of permanent lesions, should the pneumonic consolidation not become absorbed.

3. The effects of the tuberculous or pneumonic consolidation upon other portions of the pulmonary structures, especially in their immediate vicinity, must not be overlooked. Thus they often give rise to congestion and œdema, to a form of so-called emphysema due to retention of air in the air-vesicles, or to more or less pulmonary collapse. These conditions, when localised, are of little or no importance in themselves, but they have some significance from the point of view of physical signs. Congestion and œdema are, however, of decided consequence when on an extensive scale, associated with acute tuberculosis, or involving parts of lungs not actually the seat of phthisical changes.

4. It is not uncommon for limited tuberculosis and its accompanying conditions in a lung to be checked at an early period by a natural process, merely leaving behind some sclerosed or "obsolescent" tubercles; a fibroid nodule, thickening, or scar; or a fibrotic capsule enclosing a dried inspissated more or less firm caseous material, or a calcareous concretion. It is a familiar fact that conditions of this kind are frequently met with at post-mortem examinations in persons not known to have been in any way phthisical. They may, however, also be recognised during life, and sometimes they form part of a case in which subsequently well-marked evidences of pulmonary mischief appear, which may be acute or chronic.

5. The usual course of events is for the primary consolidation, whether tuberculous or pneumonic, to undergo a process of degeneration or necrosis, leading to the well-known change termed *caseation* which converts grey into yellow tubercle, and ultimately causes softening, breaking-down, or even complete liquefaction of the morbid materials. This change is no doubt important in itself—that is, as regards the direct effects of its products; but it is of still more serious consequence in that it occasions the disintegration and ultimate destruction of the involved portions of the lung-structures. A further change which may take place is the formation of fragments or masses of calcareous material.

6. As the result of the destructive process just indicated so-called *cavitation* takes place, *cavities*, *vomicæ* or *excavations* being formed. And now new factors come in—namely, those of ulceration and suppuration, or it may be even of gangrene. I do not propose to discuss here how pulmonary cavities are actually produced pathologically. Suffice it to say that in all cases of pronounced phthisis we have sooner or later to deal practically with these lesions, and they are obviously of the greatest importance, especially from the point of view of the morbid products which they form. Nor need I trouble you with any details as to their number, size, shape, conditions of the walls, nature of contents, or other particulars, which are fully described in text-books and special treatises, and which no doubt you are aware present endless varieties in different cases. It is remarkable in what a number of cases, after multiplying, extending, and enlarging by inter-communication, cavities subsequently become arrested and undergo reparative processes; while after discharging freely they often gradually dry up and may undergo marked contraction or even practical obliteration. On the other hand, the destructive process may so advance that a lung is ultimately converted into a mere huge cavity.

7. Fortunately for a large number of phthisical patients, the morbid changes in the lungs are not wholly destructive, and the next one to be referred to, which is of the greatest importance from different points of view, is that of *fibrosis* or *sclerosis*. Without attempting any discussion of the pathology of this condition, whether it originates directly from tubercle, or is due to an interstitial pneumonia, or to proliferation of tissue, I merely desire to emphasise the fact that in cases of chronic phthisis this change is always present more or less; and it is often very pronounced and extensive. And I do so because I have been much struck with the frequent failure to recognise pulmonary fibrosis clinically, when the signs were perfectly typical, not to say obtrusive. In its lesser degrees, in a diffuse form, pulmonary fibrosis seems to be a comparatively early change in some cases of tuberculosis, and to offer a resistance or barrier to the advance and activity of the tubercle bacilli and to the progress of the disease. This has been attributed to a slighter degree of virulence of the organisms; but I think it may be otherwise explained, and in my experience has been usually associated with pleuritic adhesions, from which the change has penetrated into the lung. A far more important aspect of the fibroid change is that it is the means by which nature arrests the progress of well-marked or even advanced phthisis and repairs in varying degrees the damage that the destructive processes have produced. Thus it surrounds limited consolidations or caseous materials, often isolating them with thick and dense capsules and preventing them from doing further mischief. It takes a prominent part in the limitation and contraction of cavities already referred to and materially promotes reparative processes in connexion with these lesions. In not a few instances pulmonary fibrosis is a pronounced diffused or even universal change, the lung presenting a peculiar contracted and shrunken appearance and being remarkably dense and indurated. To such a condition the term "fibroid phthisis" may be conveniently applied, without committing oneself to any particular view as to its origin or exact pathology. It is often unilateral but may affect both lungs more or less. Extensive fibrosis is a prominent feature in many cases of mechanical phthisis.

8. While it is impossible to differentiate exactly the conditions of the *bronchial tubes* ramifying through the lungs in ordinary cases of thoracic phthisis, it is well to bear in mind that they are liable to be more or less affected in different ways. I am not now referring to the fact that tubercles start in certain cases in connexion with the bronchioles, or that peri-bronchial changes take place which we cannot differentiate clinically. I mean that the bronchi may present morbid changes which are in themselves important and may be recognised during life. There may be no more than a bronchitic condition, directly associated with, and secondary to, the phthisical change, and often therefore limited to one lung or to a portion of it. Not uncommonly there is, no doubt, definite tuberculosis or ulceration of many of the bronchi. In certain cases bronchiectasis is developed in various degrees, usually associated with the fibroid change. These conditions are of consequence on account of the morbid products which form in the affected tubes.

9. Brief allusion may be made to the *vessels* in cases of pulmonary phthisis. It is highly probable that occlusion of branches of the pulmonary artery, by embolism or thrombosis or in other ways, may contribute to the necrotic process, and thus help to promote destructive changes. In connexion with cavities vessels which are still patent often course along the walls or traverse the space and it is well known that they may be the seat of definite aneurysms of some size. When the lungs are extensively fibrotic there is likely to be a corresponding obliteration of vascular branches, which may lead to more or less serious obstruction of the general venous circulation.

10. In not a few instances *blood* or its remains in the lung form a part of the morbid anatomy of pulmonary phthisis. The observations of Dr. Reginald Thompson on this point are of great value and I refer you to his writings on the subject. Occasionally, as the result of a grave and fatal hæmorrhage, one or both lungs become rapidly infiltrated with blood, which collects in the tubes and air vesicles, causing speedy suffocation.

11. I have already referred to the slighter degrees of so-called emphysema in connexion with phthisical lesions but there is one aspect of *compensatory pulmonary distension* of the lung which deserves special notice. If one lung is extensively diseased and rendered practically useless, especially when the fibroid change is pronounced, the opposite lung becomes enlarged, it may be to a considerable or extreme degree. This condition, however, is not really, in the proper sense of the term, emphysema, as applied to the disease thus named, but merely indicates that the healthy organ is doing vicarious work, and may be even actually hypertrophied. The unaffected portions of both lungs may be similarly utilised more or less extensively in cases of diffused phthisis.

12. The cases in which phthisis supervenes on well-marked *chronic bronchitis*, often accompanied with considerable or even extreme *emphysema*, must be placed in a separate category. Here the phthisical lesions are, for a time at any rate, of a subordinate character, those of the bronchitis and emphysema being predominant. Such conditions may, however, ultimately become completely overshadowed by the phthisical changes, of which fibrosis is usually a prominent feature. Under such circumstances the appearances presented by the lungs are likely to be of a very varied

character. Occasionally phthisis supervenes on dilated bronchi, or plastic bronchitis, and these lesions are then to be recognised independently. The same remark applies to other pulmonary diseases to which phthisis may be secondary. It is not necessary to refer to them here more particularly, as they have already been enumerated.

13. The last point to be noted in relation to the pulmonary aspect of thoracic phthisis is that in those cases where it follows the inhalation of various solid particles, especially in connexion with certain occupations, the lungs are more or less infiltrated with these particles, which add to the difficulties and contribute to the consolidation, which is then usually of a very mixed nature. The organs often present an abnormally dark colour and may be quite black, especially in so-called "carbonaceous phthisis." Abnormal pigmentation of the lungs is often noticed in cases of chronic phthisis, but this is of little, if any, practical significance.

B.—Main Air-Tubes.

Although not actually situated within the chest, the *larynx*, as part of the respiratory system, naturally attracts attention in cases of thoracic phthisis, should it happen to be affected in any way. The *trachea* and *main bronchi* are, however, very liable to be overlooked, though they are frequently involved. These passages may be the seat of mere congestion, catarrh, or simple inflammation; but the more definite morbid conditions to be noted are: (1) infiltration of the tissues, or the formation of distinct tubercle, which it is said may even form tumours; (2) tuberculous ulceration with consequent suppuration; (3) cicatrisation of ulcers, or chronic thickening of the walls, leading to more or less obstruction; (4) perforation of an ulcer very rarely, with consequent mediastinal or subcutaneous emphysema; and (5) deeper and more extensive destructive changes, involving the perichondrium and cartilages and leading to necrosis of these structures and its consequences. In addition to these definite lesions of a tuberculous nature other changes may affect the larynx, including motor disorders, even paralysis of a vocal cord, due to interference with one or other of the inferior laryngeal nerves in the chest, especially the right nerve when it happens to be involved in a pleuritic thickening at the apex of the lung. It is further worthy of note that pronounced syphilitic lesions affecting the main air-passages are sometimes present in phthisical cases and may under these circumstances be factors of special importance from a clinical point of view.

C.—Pleura and Pleural Cavity.

The morbid conditions affecting the pleura which originate or form a part of thoracic phthisis are of the utmost importance and one or more of them are met with in almost every case. And yet, even when pronounced and extensive, my experience compels me to say that they are quite commonly altogether overlooked clinically and receive no attention whatever, or they are entirely misunderstood. If time permitted, I should have liked to discuss this aspect of the subject at some length, but on the present occasion I can only give the following summary of the pleuritic conditions which may be met with in thoracic phthisis.

1. Definite formation of *tubercle*, either as diffused granulations, especially in the more acute cases; or as infiltrations or masses of some size, which undergo caseation. In pulmonary tuberculosis the visceral pleura is usually involved, perhaps always. Tubercles are often present in pleuritic adhesions.

2. *Dry pleurisy*, either limited or patchy usually, on one or both sides; rarely extensive or even general over one side.

3. *Pleural effusion*, generally of a more or less serofibrinous nature, sometimes hæmorrhagic or chylous, and due to obvious pleurisy as a rule. Occasionally the effusion is more serous and apparently of the nature of an active dropsy. It may be acute, subacute, or chronic; and tends to recur after removal by operation. The effusion may be the first evidence of definite tuberculosis, which from that time progresses rapidly or slowly, the lung being secondarily involved. In other instances it supervenes on previous distinct pulmonary phthisis and may occur on the side opposite to the original seat of mischief. Occasionally it appears on both sides, either simultaneously or in succession. Pleural effusions which are undoubtedly tuberculous become absorbed in some instances, even when double, but sooner or later the true nature of the disease almost always becomes manifest. It is highly probable that in some instances when the pleurisy is apparently primary, old or latent tuberculous foci exist either in the lungs or in the mediastinal glands.

4. *Suppurative and ulcerative pleurisy—Empyema.* It is commonly believed that a large proportion of the more chronic and latent cases of empyema are associated with tubercle bacilli; and an acute form of "tuberculous suppurative pleurisy" may certainly occur. In most of these cases which appear to start in the pleura some tuberculous foci exist within the chest, either in the lungs or the glands; and an empyema may develop in the course of well-marked pulmonary phthisis. An effusion which is originally serofibrinous may become purulent; but this change is by no means constant, even after repeated removal of the fluid by operation. Pus usually gains an entrance into the pleural cavity, or forms there as a secondary event, when perforation of a pulmonary cavity takes place, giving rise to pneumothorax, and it may then be extremely foul. The condition now under discussion is, comparatively speaking, exceptional, but still it is necessary to be prepared for it. At the same time, it is a mistake to jump to the conclusion that every case of empyema is tuberculous, to which there is a tendency nowadays. At any rate other pyogenic organisms are often concerned. I have met with not a few cases which have done extremely well, even after the purulent collection has burst into the lung and been thus discharged; while in other instances the future depends very much upon how it has been dealt with by operative measures. Of course unusually favourable conditions may remain in these cases for the development of phthisical changes, even though the empyema was not originally tuberculous.

5. *Pleural adhesions.* In any case of thoracic phthisis that is at all chronic, adhesion of the pleural surfaces, not uncommonly accompanied with much thickening, is certain to be present and it is in a large number of instances a condition of much consequence. It may be limited to the apex or upper part of the lung, where a dense cap is liable to be formed; or there is an extensive or general agglutination of the pleural surfaces on one or both sides. The condition may follow one or more known attacks of pleurisy, which have preceded definite phthisis, or have supervened during its course. Often, however, it has developed gradually and progressively, either before the phthisical changes have been recognised or along with the advance of the pulmonary disease. Not uncommonly it extends much beyond the limit of such disease and is then usually the outcome of a dry pleurisy, by no means necessarily showing any definite tuberculous origin and often not recognised clinically. Or it may be due merely to a proliferation of tissue possibly. Anyhow, there is the morbid change, which can in most instances be readily demonstrated during life. It may be noted here, that while likely to be a source of embarrassment to the lung, pleural adhesion is also a protection against perforation or rupture from within and consequent pneumothorax. Even when it does not entirely prevent such a lesion, it limits a pneumothorax in proportion to the extent to which obliteration of the pleural sac has taken place. One effect of extensive and strong pleuritic adhesions is that they tend to retain secretions and morbid products in the lungs, a feature which must not be forgotten clinically.

6. *Pneumothorax and its consequences.* Were it not for the protection afforded by adhesions just referred to, escape of air into the pleura in connexion with pulmonary phthisis would be much more frequent than it is. Pneumothorax is nevertheless a condition which should always be borne in mind in relation to thoracic phthisis. It usually results from the rupture or perforation of a cavity in the lung; but it may be associated with a softening caseous mass. Sometimes it occurs at a very early stage, or, indeed, it may be practically the first evidence of the presence of lung-trouble, of which I have recently met with a very striking example. Or, again, there may be considerable chronic phthisis on one side, while extensive or even general pneumothorax supervenes on the opposite side, in connexion with early mischief in the corresponding apex. Most commonly the lesion is on a more limited scale, though quite definite; but the affected area may be so small that it cannot be detected during life. Along with the air in the pleura some kind of fluid is likely to be present, generally pus—*pyo-pneumothorax*; but it may be serous—*hydro-pneumothorax*, due to secondary pleurisy. It is a remarkable fact that a pronounced pneumothorax may settle down to a chronic condition which does not seem to cause any inconvenience, or, indeed, appears sometimes to help to check

the activity of the pulmonary disease; or the pleural cavity may contract to such a degree that it becomes impossible to detect it during life. I have recently had a very interesting case of this kind at University Hospital.

7. *Combined conditions.* It will suffice to mention that the pleuritic conditions in cases of thoracic phthisis are not uncommonly of a mixed character and they are sometimes so complicated as to be most puzzling if not properly understood.

It may be noted here that cases are occasionally met with in which tuberbulosis affects serous membranes extensively, it may be without any visceral lesion. It usually starts in the peritoneum, then invades successively the pleurae and sometimes the pericardium. This is almost invariably the nature of subacute or chronic cases of so-called *polirrromenitis.*

D.—Pericardium—Heart Vessels.

I have been much struck with the slight attention which is paid to these intra-thoracic structures in cases of phthisis. Indeed, the general idea seems to be that there is a strong antagonism between affections of the heart and consumption—an idea for which there is really no positive foundation. As a matter of fact, morbid conditions affecting these structures are not uncommonly of considerable practical importance in phthisical cases and the following are the chief points which experience has taught me to be worthy of note.

1. In cases of marked chronic phthisis affecting the left lung, owing to contraction of this organ, the heart and roots of the great vessels, with the enclosing pericardium, are often *unduly exposed*, coming into unusual contact with the front of the chest, and this exposure is sometimes very striking. At the same time the heart is frequently more or less raised and the external surface of the pericardium is likely to become adherent to the thoracic wall. This combination I have been accustomed to describe as "the exposed, elevated, and externally adherent heart." Considerable cardiac embarrassment may be thus produced. In right-sided cases a similar condition may sometimes be noted but to a less degree, the heart being drawn towards the right side. In other instances this organ is displaced more towards the left axilla in connexion with old pleuritic adhesions and retracted lung. It may be stated generally that adhesion of the external surface of the pericardium to the adjacent pleura is common in the more chronic forms of thoracic phthisis.

2. The pericardium may be the seat of definite *tuberculous* changes, either acute or chronic, and these may lead to pericarditis with effusion, or more commonly to pericardial thickening and adhesion, which may be very considerable. These conditions are usually secondary to pulmonary and pleuritic changes but they may occur at an early period or may possibly even be primary. The presence of internal as well as external pericardial adhesions in these cases is highly embarrassing to the heart. Such adhesions may certainly exist apart from any obvious tuberculous disease of the pericardium. As a consequence of their effects the heart may become the seat of hypertrophy with dilatation. In exceptional instances a cavity in the lung has perforated the pericardial wall and given rise to pneumo-pericardium and its consequences. Personally I have never met with a case of this kind.

3. As regards the condition of the *heart* itself the following facts may be noted. (*a*) It is not at all uncommon to find valvular diseases of different kinds in cases of pronounced thoracic phthisis, mitral as well as aortic, and it is at any rate a great mistake to act in an individual instance upon the assumption that there is an antagonism between them. Endocarditis, with tubercle bacilli in the vegetations or actual tubercles on the endocardium, particularly of the right ventricle, has been met with in a certain proportion of cases, but so far as my experience goes, actual tuberculosis associated with the heart itself is of little clinical significance. (*b*) In many cases of thoracic phthisis the tendency is towards cardiac atrophy, which may be very marked; or under certain circumstances to degeneration of the walls. In acute forms of the disease, especially of a pronounced tuberculous nature, these changes are likely to be very conspicuous. (*c*) Occasionally, owing to obstruction to the pulmonary circulation, the right side of the heart becomes distinctly dilated, with sometimes a degree of hypertrophy. As a consequence there may be more or less tricuspid regurgitation. These results are generally met with when both lungs are the seat of extensive fibrotic changes, accompanied with dense pleuritic adhesions; but temporary distension of the right cavities may also occur in certain acute cases. A tendency to cardiac thrombosis in the right cavities may be associated with thoracic phthisis, especially towards the close of life in prolonged cases. (*d*) It happens now and then that the heart is distinctly hypertrophied in cases of phthisis, altogether apart from valvular lesions, this condition being, however, not due to the phthisis but to some other cause which happens to be associated with it, such as Bright's disease or extensive arterial degeneration. (*e*) Phthisis may develop in cases of congenital heart-disease and is especially associated with stenosis of the pulmonary orifice. In an interesting case which came under my observation many years ago, there was not only congenital disease at this orifice, causing both obstruction and regurgitation, but one of the primary divisions of the vessel was practically non-existent.

5. With regard to the *vessels* in cases of thoracic phthisis, it is well to be prepared to recognise marked degenerative changes in the aorta and its main branches, which are by no means uncommon, though they may not be directly connected with this complaint. They are not infrequently observed even in young subjects. The aorta and pulmonary artery may be compressed near their origin by an adhesion or thickening in chronic phthisis; and in one case which came under my observation the signs thus produced were so pronounced that congenital pulmonary stenosis was diagnosed, which did not exist.

Aneurysm must be specially remembered in relation to thoracic phthisis. As already mentioned, it may be one of the causes of the trouble, but in other instances the two diseases are quite independent. In one such case in which rapidly fatal hemoptysis occurred, it was impossible to say until a post-mortem examination was made which was the source of the hæmorrhage. It really came from an aneurism in a phthisical cavity.

With regard to the veins, it will suffice to state that exceptionally one or other of the large veins within the chest is more or less obstructed by chronic changes associated with thoracic phthisis.

E.—Mediastinal Structures.

In the mediastinum the *absorbent glands* are of special importance in relation to thoracic phthisis, particularly those about the bronchi. On the present occasion I can only deal very briefly with this part of my subject, but for more details I may refer you to my article on "Diseases of the Mediastinum" in Clifford Allbutt's "System of Medicine." The glands are often tuberculous, especially in young subjects, and this may be the primary focus of the disease. They may attain a considerable size, even sometimes forming a definite tumour. They tend to caseate, and suppuration is liable to take place in children, which may communicate with the trachea or with a bronchus. A kind of cavity or cyst may thus be formed, with discharge of pus. If the glands are much enlarged they may compress more or less these tubes; the larger intra-thoracic veins; or the pneumogastric or recurrent laryngeal nerve. Caseous glands have been known to ulcerate through one or both bronchi and to cause fatal obstruction of the main air-tube. Exceptionally perforation takes place into a large blood-vessel, or into the œsophagus, and the latter may be drawn out into a diverticulum. Tuberculosis of the mediastinal glands, when primary, is likely to spread to the lung or pleura, and it may be almost impossible to distinguish between the several structures. When the glands in the anterior mediastinum are affected, pericarditis is said to be common, either from direct extension or by rupture of a softened gland into the sac. In exceptional instances the thoracic duct is involved in tuberculous disease.

The œsophagus may also be referred to here more particularly as one of the contents of the posterior mediastinum. Its upper end is liable to be more or less involved by extension from laryngeal tuberculosis. As an independent condition, however, a tuberculous ulcer is very rare in this tube. Still it may possibly be met with, and it has been known to perforate and to cause purulent pleurisy.

Another mediastinal morbid condition in thoracic phthisis, already referred to, must be borne in mind, namely, that perforation very exceptionally takes place from the main air-tube, or possibly from the lung, giving rise to mediastinal emphysema. In extremely prolonged cases more or less chronic mediastinitis is not uncommon and this change may be an important factor in certain cases.

F.—Thoracic Walls and Diaphragm.

It is remarkable how seldom any notice whatever is taken of the conditions of the structures forming the chest-walls in

cases of thoracic phthisis. Indeed, I am not exaggerating when I affirm that they are almost always practically ignored altogether, even when the changes are of a pronounced kind, and are of much consequence from a clinical point of view. I may remark in passing that no value whatever can be attached to certain phenomena supposed to be related to phthisis, such as the presence of chloasma or undue muscular irritability over the chest. A peculiar hypertrophy of one or both mammary glands has been described, especially in males, due to a chronic mammitis, but I cannot remember having noticed it in any of my cases. The following are the conditions of the chest-walls to which I desire to draw particular attention as practical factors in relation to thoracic phthisis in different cases and they are often more or less combined.

1. The *superficial tissues* and *muscles* are usually more or less wasted and this wasting may attain such a degree, even in patients previously well-covered, stout, or muscular, that scarcely anything but skin is left, all fat and even muscle having practically disappeared. The intercostal muscles are also often much atrophied. Sometimes the muscles are more wasted on the side of disease, when it is unilateral. Surely the importance of such a condition of things clinically is self-evident, both in relation to symptoms and physical signs.

2. Another condition to be noted, of very common occurrence, is *abnormal rigidity* of the bony and cartilaginous framework of the chest, which may reach an extreme degree, so that the walls are practically immoveable. This condition is naturally most frequent and pronounced in elderly patients, and is often quite independent of the phthisis, but it is by no means uncommon in comparatively young subjects and I believe may be definitely associated with a chronic phthisical process. In any case, when present, it is a change which always demands due recognition and an endeavour should be made to estimate its degree and effects.

3. Apart from an originally small and contracted, or so-called "phthinoid" or "alar" chest, the *changes in its shape and capacity* produced by intra-thoracic morbid processes and manifested externally in its walls, should also, in my opinion, be regarded as an important pathological factor in a case of phthisis. This region as a rule comes to present considerable deviations from the normal as regards size and conformation, with marked irregularities on the two sides, and the thorax may ultimately become practically a deformed one. These changes are naturally most pronounced in young and delicate subjects, whose ribs and cartilages are soft and yielding, but they also occur later, and it is very remarkable what a wreck an originally fine chest may ultimately become.

4. In those cases where phthisis supervenes on previous *deformities of the chest*, these of course should always be taken into account. They may be of different kinds but are especially important when they have resulted from caries of the spine, leading to angular curvature and its associated conditions, which cause serious embarrassment of the intro-thoracic structures at the best, but when these structures are involved in phthisical changes, extensive it may be, the difficulties are proportionately increased.

5. The implication of the walls of the chest themselves in *tuberculous* lesions could hardly be overlooked and of course they may be of considerable importance. In most instances they are obviously associated with the bones or cartilages. Occasionally one meets with cases where there has been more or less extensive tuberculous disease of the absorbent glands in the superficial structures, some of which may still remain, while others have caseated and suppurated, leaving behind unhealthy scars, ulcers, or sinuses. Very rarely a kind of tuberculous infiltration of the tissues is met with; and in a recent case of rapidly progressive tuberculosis within the chest with which I am acquainted, the mischief made its way externally through the walls and definite tuberculous manifestations were subsequently observed in connexion with the soft structures.

6. The rare condition—*subcutaneous emphysema*—must be mentioned as a possible complication in a case of thoracic phthisis, in relation to the superficial tissues. It may not only follow mediastinal emphysema but has resulted very exceptionally from the rupture of a pulmonary cavity into the superficial tissues, as well as from perforation of a laryngeal ulcer. When present it can hardly be overlooked.

7. In this connexion it may be noticed also that morbid changes affecting the *diaphragm* may be associated with thoracic phthisis, which, though difficult to recognise or demonstrate during life, certainly in some cases contribute to the clinical phenomena, and it is well to bear in mind the possibility of their existence.

Variations in morbid conditions.—The pathological changes which I have thus comprehensively sketched differ widely in their exact nature in individual cases of thoracic phthisis, as regards the structures actually involved, the extent and distribution of the mischief, the mode of progress of the lesions, and their combinations. In some instances they are essentially destructive and progressive, especially when acute or subacute, and no attempt at arrest or repair appears to be made. Even in acute cases, however, the active changes may cease, things settling down into a chronic type of phthisis, or a practical cure may ultimately be effected. In a large majority of cases the morbid processes are more gradual and slow in their advance, though progressive; while in others they remain unchanged for long periods, being often confined to a limited area; or reparative changes become a prominent feature, the fibrotic element being then usually marked. While as a rule the thoracic conditions in phthisis are fairly simple and easily understood by anyone who has taken the trouble to study them and to gain a comprehensive knowledge of their possible nature, in not a few instances they become highly complicated, especially when the progress of the disease has been very chronic. The lungs themselves often present combinations of morbid changes sufficiently complex, from their character and extent; but when in addition, as is commonly the case, the other structures mentioned become more or less involved in different ways, while, it may be, independent but associated diseases affecting the chest are also present, the state of things is likely to be highly embarrassing, both from the pathological and clinical point of view. Moreover, some acute or accidental complication may at any time alter the complexion of a case very considerably and add to its difficulties.

With regard to the lungs, it may be stated generally that in the ordinary run of cases of phthisis different changes exist in different parts of the same organ, which are not only evident on post-mortem examination but can be recognised during life. Thus it is usual to have one or more, it may be several, cavities in the upper part, with fibrotic changes not uncommonly; with further down areas of tuberculous and pneumonic consolidation, undergoing caseation and softening; while the lower lobe exhibits miliary tubercles, scattered or in groups, which may be extensively distributed and are often firm or sclerosed. Sooner or later both lungs are more or less involved; and the disease is more frequently bilateral at an early period, according to my experience, than is usually supposed. In very chronic cases both lungs may present remarkable appearances, associated with extensive or general pleuritic adhesions, of which I have here interesting specimens from cases which have occurred at University College Hospital within a recent period.

Pathological effects of phthisical and associated changes.—Under this head it may be well to indicate briefly what are the chief practical effects of the various lesions met with in cases of thoracic phthisis, and they may be thus summarised:—

1. Temporary interference with the action and functions of the respiratory organs, by consolidation and associated changes, or by pleural effusion, which afterwards clear up. These may occur at an early period or during the course of a case and for the time being are often serious. The heart may also be more or less disturbed in its action by such conditions.

2. Absolute destruction and consequent uselessness, either of a limited area or of extensive tracts, of the pulmonary tissues, thus permanently impairing in various degrees the respiratory function. Even when the phthisical process is arrested after cavities have formed, and fibrosis has taken place, the involved portion of the lung can be of no further service, though other parts of the organ may take on compensatory work.

3. The formation of morbid products of different kinds, often purulent and of a wasting or exhausting nature, and usually discharged as expectoration. Any kind of pleural effusion which has to be removed again and again, as well as empyema, also deserves mention under this head.

4. The formation and absorption of toxins or other deleterious products—associated with tubercle bacilli, tubercle and its changes, pneumonia, suppuration, &c. It

is Ito these agents that the pronounced general and remote effects of thoracic phthisis appear to be mainly due, and no doubt this is a most important pathological aspect of the disease.

5. Physical embarrassments of different kinds, the morbid conditions producing them not being in themselves of an active or serious nature, but being often of much consequence from this point of view, as exemplified by fibrotic changes, extensive pleural adhesions, pericardial adhesions, rigidity of the chest-wall, and great muscular wasting. These conditions often materially interfere with breathing power; as well as with the acts of coughing and expectoration. They may also embarrass the heart; obstruct the venous circulation; or interfere with particular veins, tubes, or nerves.

6. The occurrence of accidental lesions, usually grave in themselves, especially hæmorrhage and pneumothorax, for which certain phthisical lesions afford highly favourable conditions.

In not a few instances the pathological effects just indicated are more or less combined in the same case of thoracic phthisis.

Remote morbid conditions.—In these lectures I am only immediately concerned with the pathological changes and conditions which are associated with the chest in cases of thoracic phthisis. It must never be forgotten, however, that in this disease other structures are often—indeed, it may be said usually—affected, and contribute more or less to its clinical manifestations. Without entering into any discussion it must suffice to state that these remote lesions are either of a tuberculous nature; or are well-known secondary non-tuberculous results of phthisis; or belong to the category of accidental or independent complications or complaints.

The Milroy Lectures

ON

THE ETIOLOGY OF TYPHOID FEVER AND ITS PREVENTION.

Delivered at the Royal College of Physicians of London on Feb. 20th, 25th, and 27th, 1902.

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LECTURE II.[1]

Delivered on Feb. 25th, 1902.

MR. PRESIDENT AND GENTLEMEN,—I shall not trouble you with any proofs of the predisposing causes of typhoid fever about which there is no dispute. For instance, sex appears to have no influence on the disease, while the predisposition to it is much influenced by age, most of the cases being, as already stated, under 30 years of age, and the highest percentage of cases during the quinquennial periods of life being from 15 to 19 years of age, when nearly 27 per cent. of the total cases occur. Nearly 50 per cent. of the cases occur between 15 and 25 years of age, and over 84 per cent. between five and 30 years of age. I find it stated in vol. xxxi. of the Reports on Sanitary Measures in India (for 1897-98) that: "As usual, young men and unacclimatised soldiers were the chief sufferers (from typhoid fever). Among those from 20 to 25 years of age the death-rate was 12·74 per 1000, against 9·52 in 1896; while among men between 25 and 30, and from 30 to 34, the mortality was 4·98 and 2·77 per 1000 respectively. Among men of less than one year's residence in India the death-rate from this fever was 18·50 per 1000, among men between one and two years 10·79, and among troops between five and ten years' service the rate was 2·98 per 1000." It is especially a disease of autumn and is known as the autumnal or fall fever in New England, but an important exception to this in the case of London will be mentioned in the next lecture. It is especially prevalent during dry and hot autumns and generally rare in cool and wet ones. On the other hand, outbreaks of it are not infrequently checked by heavy rainfall which washes the soil and also washes away accumulations of foul matter in the drains and sewers, although heavy rains, on the other hand, may wash such impurities into water used for drinking, as pointed out by the late Sir George Buchanan in his report on Festiniog in 1863. Overcrowding appears to have less influence on the spread of typhoid fever than it has on any of the other contagious fevers, owing to the fact, no doubt, that the disease appears to be less directly spread from person to person than the other diseases of its class. It is also generally agreed that the poison of the disease is chiefly spread, as pointed out by Dr. Murchison, by means of excretal refuse, but especially by pollution of drinking-water by such foul matters. In the early times in the investigation of the causes of this disease it was considered sufficient to show that a place where it prevailed had its water, air, or soil or any or all of them contaminated with excremental filth. Thus, in the third report of the medical officer of the Privy Council, published in 1860, outbreaks in Bedford, Bath, and Kingston-Deveril (Wilts), and Dronfield (Derbyshire), are reported on, and in all of them it is considered sufficient to show the state of things just mentioned. But the inspectors of the Privy Council, headed by Dr. Buchanan, and under the guidance of Mr. Simon, were very soon not satisfied with such investigations and adopted the plan of, as far as possible, tracking each outbreak to the special circumstances more particularly associated with it.

We will now consider a number of instances in which cases of outbreaks have been caused in this and other countries, beginning with those which have been connected with general insanitary conditions, and I shall, as far as possible, quote the actual words of the reporters, as that will make the information much more valuable than if I summarised the reports myself. In the sixth report (1863) of the medical officer of the Privy Council is a report by Dr. J. S. Bristowe on fever at Whitehaven. He satisfied himself that the cases were undoubtedly cases of typhoid fever. He came to the conclusion that the fever was spread by means of general filthy conditions. He says: "I have no hesitation in asserting that there is no English town with which I am acquainted where the sanitary circumstances (with one or two exceptions) of the inhabitants, and especially of the poor, are in a more disgraceful and degrading condition. The houses of the labouring population (more particularly in the central parts of the town) are crowded together in a way which is scarcely conceivable; the houses are for the most part dirty, dilapidated, and imperfectly (if at all) ventilated; they are overcrowded and the cellars are habitually let out as tenements; houses, courts, and even streets are without any privy accommodation and where privies are provided they are of the most objectionable kind and generally most objectionable as regards their situation; drainage scarcely exists." And it must be remembered that this is the experience of a metropolitan medical officer of health. Under the heading "Causes of Fever" he says that the condition of things disclosed in the statement just made "amply accounts for the present epidemic of fever; indeed, it is difficult to suggest any measures for producing typhoid fever so likely to be efficient as those which have allowed Whitehaven to be degraded into its present filthy state."

In the seventh report of the medical officer of the Privy Council (1864) is a report by Dr. Bristowe on fever at Grantham. He states that it was "true typhoid or enteric fever." He shows that it was not caused by the water-supply because it was distributed amongst persons supplied from various sources, "so that if the fever has been due to any poisonous quality of water this poisonous quality must have been shared by the canal water, the conduit water, and the well water as well as by the water furnished by the company." And he considers filthy conditions to have been the cause of it and says: "Knowing well as we do that typhoid fever has been shown over and over again to arise from the effluvia of accumulated human excrement and that throughout the whole town of Grantham such effluvia have prevailed there remains, I think, scarcely a doubt that the disease must be attributed to this cause. The fact that the disease has prevailed chiefly among the better-off classes is, on the whole, confirmatory of this view, inasmuch as it is their houses chiefly which are connected with the imperfect sewers (and connected, too, by imperfect means) and it is mainly along the streets which they occupy that the principal sewers

[1] Lecture I. was published in THE LANCET of March 22nd, 1902, p. 793.

of the town pass with their (until recently) untrapped gully holes."

In the same volume is another report by Dr. Bristowe on an outbreak of typhoid fever at Debenham. He points out that the disease seems to have clung to the eastern portion of the village and especially to the houses *bordering on the pond* or in its immediate neighbourhood. It would seem, and is by no means improbable, that this stagnant receptacle for filth was pestiferous and the direct cause of the illness which prevailed.

In the tenth report of the medical officer of the Privy Council (1867) is an account of an investigation of an outbreak of epidemic typhoid fever at Winterton in Lincolnshire by Dr. Thorne Thorne. Of this he says: "The epidemic prevalence of fever in Winterton is undoubtedly to be ascribed to the disgraceful state of the privies, cesspools, ashpits, and wells," and he describes these in detail. He also gives an account of the water in the well supplying some of the cottages where there have been cases of disease and says that the people living in one cottage "and who have always enjoyed good health, not liking the taste of it, have drawn their water from a neighbour's well." On this he remarks: "Nothing could point much more conclusively to the contaminated state of this water, and on examining it I found it to be of a light brown colour and disagreeable taste and to yield a considerable deposit after standing for a few hours. Under the microscope it exhibits a large quantity of organic matter, both animal and vegetable, as well as infusoria and animals of a low type." Dr. Thorne made an attempt to ascertain how the fever originated and on this he says: "In some instances I endeavoured to ascertain whether the fever could have had a spontaneous origin, but the inhabitants all seem to be on such terms of intimacy with each other that they continually frequent the infected houses, there assist in attending to the sick, and thus come into contact with the bowel discharges, or else they drink the contaminated water. My inquiries therefore failed to elicit any information on this subject, and owing to the fever having now existed in the town to a greater or less extent for nearly seven years I was unable to ascertain the manner in which it first originated."

Mr. J. Simon in his Report as medical officer of the Privy Council and Local Government Board for 1873 (New Series, No. 2) gives in an appendix "Illustrations from Inspectors' Reports of the four years 1870-73, of the circumstances in which enteric fever is commonly found prevalent." There were 148 such reports during the four years.

Dr. F. R. Blaxall reports on Selborne, Hants: "Outbreak of enteric fever following importation to the village of a case of that disease, subsequently spread by polluted water and infected privies. Water-supply derived from wells which are much exposed to pollution, filthy privies, neglect of excrement removal, general want of drainage." (Ninth report of the medical officer of the Local Government Board for 1879.)

Slaughter-houses have sometimes been suspected to be in some way or other the cause of the spread of typhoid fever in their neighbourhood, but when investigated these cases have always been found to be explained by some other cause. For instance, at New Brighton (Cheshire) in 1888 there were complaints respecting an alleged occurrence of typhoid fever round a certain slaughter-house. Mr. Spear reported that the fever was not more common in New Brighton than in other parts of the urban district of Wallasey, but that the tendency to the recurrence of the disease was in the low-lying part of the district, especially in certain spots, one being in the neighbourhood of the particular slaughter-house. He, however, stated that "there is not sufficient evidence for regarding the slaughter-house as the origin of the fever prevalence," but that the fever was "due in all probability to the condition of public sewerage and private drainage which in the low-lying area, and especially as regarded the houses invaded, was found to be remarkably defective." Mr. Spear reported in 1890 that at Runcorn (Lancashire), where typhoid fever had been epidemic in 1884, 1887, and 1889, the spread of the disease was "associated with excremental contamination of the air by large deep ill-placed midden privies believed to have received bowel discharges of antecedent cases of the disease." In 1891 Dr. R. Richmond, medical officer of health, traced an outbreak at Hatfield Broad Oak to water from the town pump which was polluted by "the saturation of the soil with offensive matter from the want of sufficient drainage in the village, the multitude and bad construction of the cesspits and the improper disposal of house refuse" as "no drains or sewers are in the vicinity of the town pump." (*Public Health*, vol. iv.) In 1894 Dr. R. Bruce Low reported on an outbreak in the borough of Widnes (Lancashire) where there had been a continued presence of the disease for a series of years. There was evidence of importation at times from the adjacent town of Runcorn, but the spread of the disease in Widnes was "associated with fouling of air near dwellings by emanations from large privy middens in which are stored collections of excrement and other filth under very unfavourable conditions. Surface of unmade roads near the houses gradually filled by midden excrement every time the privies are emptied. No evidence of spread of disease in Widnes recently by contaminated milk, polluted water, or sewer air."

I may also quote a report by Dr. Buchanan on the sanitary state of Bridport, of which he says: "In truth, scarcely one London district really reaches the fever death-rate of Bridport, for those who appear to exceed it are chiefly those in which the great metropolitan hospitals receiving fever are situated. With London City, with Clerkenwell, with Marylebone and St. Pancras, Bridport will not bear a moment's comparison as to its fever mortality; no, nor even with Holborn, or Bethnal Green, or St. Giles." He adds that the fever was, no doubt, typhoid. Dr. Buchanan puts down as the causes contaminated water from shallow wells, described in a local broadsheet as "looking yellow, tasting strongly, with a nice good drainy smell." And "the retention of decomposing ordure and refuse about the houses. *The air of the town is polluted seriously* and on a considerable scale."

We now come to outbreaks attributed to polluted water. In the sixth report of the medical officer of the Privy Council (1863) is a report by Dr. Buchanan on Fever at Festiniog. He reports that it was typhoid fever, and with regard to the water he says: "The water-supply for some domestic purposes is obtained from the stream in the valley. This water is exposed to constant contamination; but it was stated positively, and with remarkable accord, that it was never under any circumstances employed for drinking. Water for internal use is got from wells on the mountain side, presumably situate above any possible source of pollution. Only at Bethania (one of the villages of the Festiniog Union) was there much reason to believe that a drinking-water had got contaminated by drainage." He, however, adds in a note: "Though it was very positively stated by numbers of persons that they never drank the water of the streams it is difficult to feel sure that a strict separation would be made in their use if two sorts of water were admitted into a house." He was very evidently of opinion that overcrowding had a good deal to do with the spreading of the fever, for he says, "The fever has been most prevalent and severe in the crowded houses. Some mild cases have also occurred in clean cottages, not overcrowded. But few cases have occurred in the barracks."

In the seventh report of the medical officer of the Privy Council (1864) is a report by Dr. H. J. Hunter on fever at Harpenden. He says: "The disease was plainly typhoid with diarrhœa" and he distinctly attributes the cause of it to drinking-water. In describing the house where the first case occurred he says: "The well, with a rotten structure of timber above it, was in the garden; and five or six yards from it, and raised two feet higher, was a brimful cesspool. Visitors to Bosher had complained of the water and a supply from another well had been got for them; but the family habitually used their own well until a few weeks ago, when they abandoned it because the rottenness of the edge made it dangerous to approach near enough to raise a full bucket. This well, like the others in the neighbourhood, pierced through a bed of gravel to reach the chalk and the cesspool by its side was in the gravel." Of the house where the next case occurred he says: "But in this case, as in Bosher's, the family had been obliged to desert their own well after bearing with its horrors too long a time. The well was not only in a filthy yard, unprotected, near drains and cesspools, but the people who lived nearest to it were, in general terms, accused of dirty habits injurious to the water." And with regard to another village where the fever prevailed he says: "The first four houses in the list adjoined and being one property used one privy and were supplied by one well which had a greater degree of nastiness than the rest and which was spontaneously abandoned by the consumers soon after the fever appeared. Lying low in the filthy

yard it was visible that it received the surface drainage, besides what might result from inward filtration....It is worthy of observation that the earlier cases were the drinkers of this water and that amongst them only of this group was there mortality, also that they seemed to have an instinct of one at least among the causes of their illness and sought a change of water, with some apparent success." There was, however, it will be noticed, no attempt to prove that the poison of typhoid fever had in any way obtained access to the water, it being then sufficient to prove that the water was contaminated with sewage.

In the tenth report of the medical officer of the Privy Council (1867) is a report by Dr. Buchanan on an outbreak of typhoid fever at Guildford, of which Sir John Simon says that the epidemic of typhoid fever at Guildford was peculiarly instructive and adds: "The distribution of the disease, especially during the first fortnight of the epidemic, so nearly corresponded in area with a particular section of the public water-supply of the town as to raise the strongest suspicions that this section of the water-supply was at fault. And eventually these suspicions became a certainty. First, namely, it was shown that on one particular day in August (about 10 days before the beginning of the outbreak) 330 of the 1675 houses of Guildford had *exceptionally* received their water from a certain high-service reservoir which had been previously filled from a new well and that the persons residing in or frequenting these 330 houses constituted the part of the population on which the epidemic influence had almost exclusively fallen. Subsequent chemical examination of the water of the new well detected in it the products of organic decomposition and examination of the local circumstances showed but too unquestionably whence the decomposing organic matter had been derived. The new well, no one could doubt, was most dangerously situated: in the porous and fissured chalk stratum, it was within 10 feet of various sewers, one of which, indeed, was traversed as a short cut by the iron delivery pipe of the high service. And when after the epidemic this reckless confusion of sewer and waterworks was dissected the state of things found at the spot was reported to us in the following terms by Mr. Taylor, one of the Poor-law medical officers of the town: 'The engineers employed in the repairs of the steam-engine noticed some exudation on the wall of the engine-house next the valley where the sewer runs and the pit of the fly-wheel contained a notable quantity of the same. As the exudation had the smell of sewage the ground was opened in the valley at a point adjacent to the engine-house. The sewer was found leaking in various places and the soil between it and the wall of the engine-house was saturated with sewage, of which as much appeared to run outside as inside the sewer. This was found to be an old-fashioned 12-inch drain constructed with red, unglazed gutter tiles, with butt joints and common mortar. The tiles forming the lower half of the cylinder were in places completely worn away and at one point several feet of them were missing and the upper tiles had fallen in upon the soil below. All the joints gave exit to water and the ground was a quagmire of filth beneath and on each side. Dark-coloured fœtid slush had to be dug out and removed in baskets, making the men vomit who were employed in the work.' There, of course, could not be any reasonable doubt but that the passage of this filth into the well, from which the high-service reservoir was filled, had been the cause of the epidemic."

In his report on this outbreak Dr. Buchanan makes a very interesting observation with regard to the period of incubation of typhoid fever as follows: "A point in the natural history of typhoid appears to receive elucidation if the deductions of this report as to causation are correct. The water which is believed to have been the 'cause' of the outbreak was delivered on August 17th and on that day only. The first cases of the fever came under medical observation on August 28th; after that two or three each day and a very large number on Sept. 3rd and 4th. With allowance for the varying time that would elapse in various cases between the occurrence of the first symptoms of typhoid and the sending for a doctor there is enough correspondence in these dates to fix the occurrence of the first symptoms in a great proportion of cases on or about August 28th, or 11 days after the operation of the cause. Inasmuch as other cases occurred in considerable numbers for several days after Sept. 4th it may be that in those cases there was a longer incubation period. This does not, however, upon such information as is available, appear to have been necessarily the case, for many of the high-service houses are furnished with cisterns and others with large underground tanks in which the water received on August 17th would be stored; mixed, indeed, more or less with other water delivered before and after, but not necessarily losing any noxious quality it might have possessed until a considerable number of days had elapsed. The houses in Pannell's-terrace were attacked particularly early and suddenly. These have no cisterns but take their water direct from the mains."

In his twelfth report as medical officer of the Privy Council (1869) Sir John Simon says: "Among the circumstances which we find associated with outbreaks of typhoid fever there is none of more frequent occurrence, none which we are more entitled to consider directly causative of the disease than *the consumption of polluted water*. It has been one of our most familiar experiences, one which my reports for many years past have again and again been obliged to exhibit in all its nauseous details, and which in the present report receives a new and striking illustration, that excremental fouling of wells is, in this respect, among the worst dangers which can threaten the health of a community; and it might be assumed that other common water-supplies, as distributed by companies and local boards, would equally be capable of spreading the infection." He then cites the Guildford case (already described) as an apt illustration. In the same volume is a report by Dr. Buchanan on an outbreak at Wicken Bonant, Essex. "There were, among persons getting water from private wells, less than 3 per cent. attacked by fever; among persons getting water from the parish well over 46 per cent. were attacked. No other general difference except the source of water-supply can be observed between the families which suffered and those which did not suffer from the fever. The earliest case of fever among the villagers was in a dirty cottage standing near to the brook channel, at a spot some 35 yards above the parish well. In this cottage a family named Clark, consisting of eight people, live, and seven of them have been attacked. The first case began on June 24th in one of the Clark boys. His mother was the next person who got the disease in the village, and she fell ill on July 25th, from which time cases have occurred at weekly or shorter intervals. The privy of Clark's house stands almost on the edge of the water-channel at a point 35 yards above the parish well. The boy had plentiful diarrhœa and his stools were thrown without previous disinfection into this privy. Ten days before the boy's attack there was water along the brook-course, and during his illness there must have been plenty of water in the gravel if not (at the part of the brook near Clark's cottage) above ground. At the beginning of July, while Clark's stools were constantly being thrown into the privy, the soil-water was falling and stagnant pools of water were to be seen here and there in the brook. As there is communication between the brook and the parish well some of the little water remaining in the former and mixed with typhoid stool must have gone into the well and have been drawn upon by those who derived their supply therefrom. A month after Clark's attack the drinkers of this well water began to be numerously affected with fever, commencing with other residents in the same house with him; while the drinkers of water from other wells all (with one apparent exception) escape fever for four months up to the time of inquiry, when there begins to appear some indication of extension by other means. There can be no doubt that the epidemic prevalence of the disease was caused by Clark's stools getting, with their specific poison unchanged, into the parish well. But how did the boy Clark get his fever? The village has answered this question offhand, and as regards the entire outbreak, by a reference to two cases of fever that were imported from London to the before-mentioned Brick House on May 30th. And, indeed, at first sight there is much to be said for this as a theory of Clark's illness. The Brick House drains into the brook, typhoid fever is brought into the Brick House on May 30th, the brook is running with water on June 14th, let the boy have drunk (as he very easily might) water specifically contaminated, and the connexion between his attack and the imported cases appears, dates and all, to be complete. There are important difficulties, however, to be got rid of before this theory can be accepted." After considering these difficulties Dr. Buchanan adds: "I am disposed, having stated the facts so that others may form their own judgment, to say that in my opinion Clark's fever somehow or another was caused by the fever imported from London."

Typhoid fever has been very frequently spread by contaminated water from shallow wells. Other instances of this are the following. In 1873 I traced a severe outbreak of typhoid fever at Market-Weighton (Yorks) to the well of the hotel in which I was staying. More than one member of the landlord's family had had the disease and the privy was situated close to the well. In Stone (Staffs.) Dr. Edward Ballard reported in 1874 that there was a constant prevalence of enteric fever, and that among other causes was the following: "Wells sunk close to cesspits and drain openings. Privies and wells specifically polluted by the excremental discharges of the sick."

In the Twelfth Report of the medical officer to the Local Government Board for 1882 is an account of a localised outbreak of typhoid fever at Norwood, in the Uxbridge Rural Sanitary District, by Mr. W. H. Power. The cause of this outbreak was so clearly traced by Mr. Power and is of such great interest that I may perhaps be excused for giving his account almost *in extenso*: "Very early in the investigation it was noted that the suddenness, the intensity, and the impartiality of the incidence of the outbreak best accorded with what is known of enteric fever epidemics caused by specifically infected water or milk. Milk causation of this outbreak had for good reason to be set aside, while as regards its possible causation by water there appeared at first sight a serious difficulty. The 14 houses invaded in the upper part of the terrace are provided with three pumps, each of which, it was affirmed, sucked from a separate well, and hence there appeared to be required for explanation of the outbreak by water causation sudden and simultaneous infectiveness of the water of three separate wells many yards distant from one another and from the houses. This seemed a highly improbable occurrence, and thus some time was spent over the cesspool air hypothesis, until the great difficulties in explaining the attacks of inmates of house No. 13 (which is on a separate system of cesspools) furnished a clue of much value. *It was found that pump No. III.* which served houses Nos. 13, 14, 15, 16, 17, and 18 *had at the date of the outbreak been for a long time out of order*, and as a consequence the inmates of these houses had for many weeks before their illness sought for water elsewhere. Naturally they resorted to the pump most accessible, *which happened to be pump No. II.*; for pumps No. IV. and No. I., which also they could have used, were cut off from them, the one by a strong fence, the other by a brick wall. Thus it came to be seen that at the time of the outbreak all the houses invaded had been for many weeks getting their water-supply from *one or other of two instead of from three pumps as had been confidently stated.* This reduction in the number of pumps, and therefore of wells implicated, did not, however, greatly help towards belief in water-causation of the outbreak, for there seemed well-nigh as much difficulty in accepting sudden and simultaneous infection of two as of three wells. In this dilemma I sought to ascertain whether pump No. II. had not for some reason or other come into temporary and exceptional use shortly before the occurrence of the outbreak by the inmates of houses 23 to 30. But this suspicion had to be abandoned. Both pumps had been in good order throughout the period in question, and pump No. I., which is separated from pump No. II. by a brick wall, had been used, and solely used, by the inmates of houses 23 to 30, all of which houses had been invaded in the outbreak. Still I was unable to accept a hypothesis of sudden and simultaneous infection of two widely separate wells far distant from the houses and from the cesspools—rather I was disposed to regard the confident local assurance respecting pumps Nos. I. and II. sucking from separate and distinct wells as open to doubt, and thus *it came about that I announced that for complete belief in water causation of the outbreak it was necessary that pumps No. I. and II. should suck from a single well.* My surmise was quickly put to the proof by Mr. Freeman, the inspector of nuisances, with the result—a great surprise to certain inhabitants of the terrace—that the suction pipes of Nos. I. and II. were found to lead to one and the same well.

Here, then, in infectiousness of a particular well water is explanation in some sort of the outbreak. It accounts for the limitation of the outbreak to the particular part of the terrace comprising houses 13 to 30 as well as for the intensity of the fever incidence on these houses. But it does not explain all the facts. There remains to be accounted for the two months' interval between the August–September series of cases and the outbreak of December, and especially does the suddenness of the outbreak when it did occur require explanation.

At an early stage of suspicion as to water causation of the outbreak and upon assumption of conservation in the cesspools of enteric fever material derived from the first series of cases with subsequent soakage thence of this material through 60 or 70 feet of soil to two or more wells, the above facts did not appear easy of explanation. But no sooner was a particular well found to be alone in question than a clue appeared that had been wanting. For thus considered it was seen that suddenness of the outbreak *almost necessarily implied sudden infectiveness of the particular well*, such as might have resulted from fresh conditions newly brought to bear on it, and on it alone; and search in this direction now revealed the following facts. *On Nov. 27th*, 1881, cesspool cleansing was commenced in the terrace and was repeated on subsequent days up to early December; *and the cleansing proceedings included transference of the contents of these cesspools to a hole newly dug in the garden some 40 feet from, on higher ground than, and in the line of natural soakage to, the particular well which has been called in question.* Now the main outburst of the fever did not occur until the second week of December, soon after the commencement of this cesspool emptying. Then, be it observed, and not till then, did any notable extension of fever in the terrace take place, and this notwithstanding that the cesspools must be regarded as having fostered ever since August material presumably capable of causing enteric fever. The inference is not to be avoided—namely, that this exceptional transference of cesspool contents to a hole in the ground near the particular well speedily brought about specific pollution of the well water, and thus occasioned the sudden outbreak of enteric fever among persons using that well water.

Certain subordinate considerations remain to be noticed. They do not affect the above conclusions, though they may have interest for the etiologist. Allowing for the incubation period ordinarily observed in enteric fever, this outbreak followed very quickly on the procedure which is believed to have fouled the well. It would seem, therefore, that either highly potent infective matter transferred from the cesspools to the soil of the garden passed at once into the well; or, in this particular outbreak, the interval of time between the occasion of infection and the first symptom of illness was in many persons abnormally shortened. Shortening of the incubation time may no doubt have occurred. In would be in accord with experience of certain milk outbreaks of enteric fever where consumers of large amounts of the implicated milk in a raw state have seemed to suffer from fever within a very few days of their infective meal. And what is true of enteric fever conveyed by milk may be true also of enteric fever conveyed by water, for in both instances there is chance of infective matter of great potency getting applied directly and in abundance to the intestinal tract. In this outbreak there was in many cases the usual difficulty in exactly fixing the date of attack, but so far as I have been able to ascertain by personal inquiry case by case the early attacks occurred as follows:—

Doubtfully on or about Dec. 4th, seven days after commencement of emptying of cesspools	1 case.
In three days, Dec. 8th to 10th, 11 to 13 days after commencement of emptying of cesspools	12 cases.
In three days, Dec. 11th to 13th, 13 to 17 days after commencement of emptying of cesspools	5 ,,

The above facts are not, it will be observed, inconsistent with shortening of the incubation period, as regards the earlier cases, though abridgement of that period is not absolutely requisite for their explanation.

Upon the whole, I am indisposed to accept such explanation, believing rather that infective matter passed *directly to the well on, or within a few hours of, the 27th November*, and for the following reasons. The freshly dug hole in the garden to which cesspool contents commenced to be transferred on Nov. 27th was situate, as has been said, some 40 feet from the particular well, upon higher ground, and in the line of natural soakage to the well. No doubt, therefore, the relative positions of the cesspool deposit-hole and the well, *and the porous character of the gravelly soil intervening between them*, were physical circumstances conducive to *rapid passage of cesspool-derived liquid from the newly made hole to the well—though the interval of 40 feet* that had to be traversed by this liquid in getting to the well seems at first sight to almost forbid belief in fouling in this way of

the well within a few hours of commencement of cesspool emptying. But there are other circumstances to be taken into account before a decision is arrived at. From the plan it will be seen that *the hole freshly made in the garden for the reception of cesspool contents was dug against a wall that runs toward and within three or four feet of the particular well, and that nearly midway between this hole and the well the suction pipe of pump No. II. passes immediately beneath the foundation of the wall on its way to the well.* It cannot be doubted that we have here special facilities for rapid passage of foul fluid from the recently removed cesspool contents to the particular well. Fluid matters poured against the wall would travel towards lower ground most readily and quickly along the foundation of this wall and could be thus led in the direction of the well; and, further, upon reaching a spot nearly midway between this starting-point and the well, such liquid matters could gain access to the trench in which the suction pipe of pump No. 2 had originally been laid, and following this new course alongside that pipe would be conducted directly into the well. Whether or not the above was the course actually taken by foul liquid matters soaking from the cesspool deposit hole to the well cannot now be determined. Mr. Freeman sought to put this surmise also to the test, but he failed for the reason that the plumber who had meanwhile been employed in laying on the Norwood Water Company's supply to the terrace had removed the suction pipes of the wells. In removing the suction-pipe of pump No. 2 the interval of ground between the cesspool deposit-hole and the well had become so greatly disturbed that trustworthy evidence on the above point was not to be had."

In 1883 Mr. W. H. Power (now the chief medical officer of the Local Government Board) made an important report on an outbreak at Hitchin on which Dr. Buchanan makes the following remarks in his report as chief medical officer: "In a report by Mr. Power on an epidemic prevalence of enteric fever at Hitchin fresh illustration is given of the now well-known fact that the distribution of enteric fever often follows, both in place and time, the distribution of impure water in such a way that the water cannot but be regarded as conveying the material of the fever. The particular interest of the Hitchin outbreak arises from the circumstances that it was the water-supply of the sanitary authority which had become thus infected and that the impurity, certainly connected (as Mr. Power's report shows) with the fever, yet had not been anywise recognised as the cause of the fever until his inquiry. In these respects and knowing the ability of cholera to be conveyed by water in the same manner as enteric fever, the case of Hitchin is of particular value to the present report." Mr. Power's description is as follows:—The public water-supply of Hitchin having come thus under suspicion, the facts already recorded as showing various risks to the water on its passage to the service reservoir appeared of graver import, and now an additional and exceptional risk to the water, not as yet defined, demanded especial consideration. This further opportunity for pollution of the public water-supply consisted in the circumstances that at the pumping station an eight-inch overflow pipe, contrived to convey surplus water from the receiving tank and pumping well into the river Hiz, permitted on occasion reflux of the river water into the tank. Discovery of this defect in January last was not only startling but was in a way satisfactory to the sanitary authority, for it went far to explain a difficulty that had for some time troubled persons concerned with the waterworks—viz., that without obvious cause, suddenly and at uncertain intervals, the water in the pumping well had been apt to become turbid. Along with identification of the cause of this occasional turbidity of the water service came recognition also that coincidence of two separate conditions was requisite for back flow of the river into the tank. These were slight rise in the level of the water in the river and a reduction by pumping operations of the level of the water in the tank and pumping-well to the extent of arresting overflow to the river from the tank through the overflow pipe. How often in times past these conditions have been coincident it is impossible to say, since the occasions of turbidity of the water-supply have not been recorded. But in the winter just passed, under circumstances of admittedly exceptional liability of the river to flood, and with modification last November of the routine of the engine-man's labours bringing about a doubling on pumping days of the hours of pumping, opportunities for coincidence of the conditions requisite for pollution of the pumping-well have seemingly been more frequent, and unquestionably during this winter turbidity of the water in the pumping-well has occurred on several occasions. The defect of the overflow pipe here noted was, it should be stated, rectified on Jan. 13th, since which no further turbidity of the water-supply has been observed. It would perhaps be difficult to over-estimate the gravity of the above defect in the water-service apparatus. For the Hiz, which in its course through the town is hardly more than a ditch a few feet in width, receives refuse matter cast into it from poorer dwellings abutting on it, and the river water, therefore, is liable to contain some of the most dangerous qualities of sewage. On one occasion of cursory inspection of the river I myself observed littered on the edge of the stream, just above the point of entrance to it of the overflow pipe from the waterworks and ready to be carried there by the first rise in level of the river, diarrhœal excrements cast out from the back windows of dwellings on its banks. It would seem, therefore, that given the existence of enteric fever in Hitchin and the not rare chance of excrement from fever patients getting into the river, with the liability of the river water to on occasion supplement the public water-supply, there should be no difficulty, if the water service has really been in fault, in getting some more precise explanation of the epidemic diffusion of the fever in the town than has yet been afforded. Accordingly I sought to ascertain whether or not—having regard to a two weeks' interval (or thereabouts) such as usually elapses with enteric fever between the occasion of infection of an individual and the first beginning of his illness—there had been any observed occasions of turbidity of the public water-supply that could have been related to outbursts of fever in the town. There was, however, difficulty in ascertaining this, for, as has been mentioned, no record has been kept at Hitchin of the occasions of turbidity of the water service. In the end I was able to fix the date of one only of such occasions, arriving at it in the following fashion. The outburst of fever in mid-January, which was most recent, and the facts about it most likely therefore to be remembered, was taken as a test case, so to speak, of ability of the water service to spread fever, and information was sought as to turbidity of the town water two weeks previously—viz., about the end of December—with the following result. On the afternoon of Saturday, Dec. 30th, a day on which a heavy rainfall of 0·67 inches was registered in Hitchin, very general complaint had, it turned out, been made to the waterworks manager that the water delivered by the public mains was thick or turbid; and examination forthwith undertaken by the waterworks people revealed the fact that the water in the pumping-well and in the service reservoir also was in like condition. Seemingly, it was the amount on this occasion of turbidity and its close sequence on the rainstorm that raised among the people concerned about the waterworks suspicion as to its origin and which led eventually to detection of the offending overflow pipe. Now, so far as I could learn, the water in the Hiz on Dec. 30th, rose suddenly and rapidly, and it could at once have passed back, and in considerable volume, through the overflow pipe into the pumping-well, for in view of the storage of water necessary for Sunday's consumption pumping operations had by 4 P.M. on Saturday lasted nine hours, thus reducing to a comparatively low level the 'spring water' in the pumping-well, and leaving the pipe intended to conduct surplus water from the pumping-well into the river to serve as a conduit for back-flow of river water into the pumping-well. In the face of the above evidence it is impossible not to admit that in all probability there has been direct relation between the circumstances of pollution on Dec. 30th of the public water service and the outburst of fever in mid-January. As to the outburst in mid-December, however, like causation may not, in the absence of like positive evidence, be quite so confidently affirmed. But looking to the very similar behaviour of the two outbursts, and to the other evidence that has been adduced tending to convict the water service as responsible for the observed distribution of the fever, it is easy to credit for this, the first outbreak, similar direct relation to the public water service. And in this connexion may be noted some facts or coincidences that are interesting, though not perhaps worthy to be classed as evidence. In regard to both outbursts there were matters connected with the water-supply that, on a hypothesis of water causation, might have been concerned on each occasion with the otherwise unexplained rapid declination and sudden termination of the outburst. As regards the second, or January, outburst, discovery of the defaulting overflow-pipe and arrest

in mid-January of this source of pollution of the public water service was followed some two weeks later by sudden cessation of the fever, and similarly complete emptying and thorough cleansing on Dec. 14th of the storage or service reservoir (which, for the purpose of the present hypothesis, may be regarded as having been the storage reservoir of fever material also) was followed again in about two weeks by well-nigh complete disappearance of all fever that can be considered as related to any common cause of the December outburst."

In 1889 Dr. J. Ashburton Thompson, chief medical inspector of the Board of Health of New South Wales, issued a report on an outbreak of typhoid fever at Balranald which he traced to pollution of water in a certain tank which was supplied with rain-water and was sunk in the marly clay and not known to be puddled outside; near it were several cesspits. It was shown that 14 households, in all 124 persons, were supplied with this water, and an analysis of the cases in those 14 households in which that water was regularly drunk, in comparison with that of households the people of which are not known to have drunk it, gave the result that of 124 persons who regularly drank the water 34 per cent. suffered; while of 476 persons whose relation to the water cannot be defined (that is, who were not known to have drunk it) only 5·2 per cent. suffered.

I am indebted to my friend Professor Brouardel, for many years Doyen of the Faculty of Medicine of Paris, for the particulars of three outbreaks of typhoid fever which he investigated and reported on in 1887. The first occurred at Pierrefonds. In August and September, 1886, 24 persons from Paris and Versailles went to live in three adjoining houses at Pierrefonds; 20 of these persons contracted typhoid fever more or less severely, and four of them died. It was ascertained that cases of enteric fever had occurred in these houses before, one of them having been visited five times by this fever between 1874 and 1883. The water-supply in the houses on both sides of the street was from wells which communicated with one another through the very porous soil. This was proved by the fact that a few years before a fruiterer who kept one of the houses on the other side of the street let fall a can of oil into his well, and three or four days afterwards the oil appeared in the well of one of the houses in question. The subsoil water supplying these wells passed either alongside of, or below, the cesspools of the different houses. These cesspools were not watertight, being constructed of small stones without any cement. One of them, with which two of the infected houses were connected, had a small drain from its lower part discharging into the neighbouring stream. This drain at the time of inspection was blocked, the cesspool had not been emptied for 30 years, and it was almost full of hard deposit which had to be removed with a spade. The wells for the two houses were dug at distances of 9 and 20 metres respectively from this cesspool and in such a position that the level of the bottom of the cesspool was a little above that of the surface of the water in the wells. To increase the danger the rain-water from the roofs was also discharged into the cesspool, so that whenever there was a heavy shower the water washed the fæcal matters into the subsoil and thence into the wells. A specially interesting observation was made with regard to the dates of attack. In one house five persons out of seven were attacked, all on August 27th or 28th. In another seven persons out of nine were attacked between Sept. 17th and 22nd except one domestic who was attacked on Sept. 10th, whereas in the third house all the members of the family were attacked between Sept. 25th and 28th, so that each family was attacked at a different time, but all the members of one family were attacked at about the same time. Dr. Brouardel points out an interesting explanation of this in the fact that there were heavy rains on August 2nd, 22nd, 23rd, and 24th, and Sept. 3rd, and that the attacks at these three houses were in each case about from 20 to 25 days after these rains. He also adds that the difference in the distance of the wells from the cesspools no doubt had some relation with the difference of the dates of the attacks. Samples of water from these wells were bacteriologically examined by Dr. Chantemesse, the director of the Bacteriological Laboratory at the Faculty of Medicine of Paris, and by M. Widal, and they obtained from one of them (a month after the outbreak of the disease) cultivations of the Eberth-Gaffky bacillus which they identified by comparison with cultivations obtained from the blood of the spleen of a person suffering from typhoid fever. The water was also chemically examined but it was found that the organic matters in solution in it had been almost completely oxidised. Of this Dr. Brouardel remarks: "This is an observation of which the importance is easily understood in the discussion of the question of the purification by the soil of sewage water charged with excremental matters. It shows that the soil destroys organic matters which come in contact with it; they undergo nitrification in it; but it is not the same for the germs of typhoid fever. They persist a long time in the earth; they lived for more than a month in the water of one of the wells of Pierrefonds." He then goes on to show that a case of enteric fever had been imported from Paris into one of those houses at Pierrefonds at a remote period. As is very usual in such cases the intensity of the disease varied very much among the persons attacked. Of this Dr. Brouardel says: "Of 24 persons 20 were attacked. Of these four died; six recovered after a well-characterised attack of typhoid fever; six others suffered from *états fébriles typhiques*; two others from short attacks called *embarras gastriques*, apparently not specific; and two had violent attacks of fever. The character of these different manifestations only obtains its true significance because they were simultaneously developed among the same surroundings." "If these morbid conditions had not burst out in the same focus their nosologic value would certainly have been misunderstood." On this point he quotes P. Lorain, "De la Température du Corps Humain et de ses Variations dans les Divers Maladies." "Perhaps there is a *typhoidette* as there is a *varioloid*. There is no reason why one should not admit this hypothesis, but it is a hypothesis." Of this Dr. Brouardel says: "That which Lorain considered as a hypothesis seems to me to-day absolutely proved, and I demand that one should admit in nosology this name of *typhoidette* which has the great advantage of recalling, more than the names actually used, the source from which some of these gastro-intestinal conditions originate." Dr. Brouardel then attacks the interesting question of immunity and asks whether these mild forms of the fever infection afford a relative immunity from a fresh attack of the disease. "Does the *typhoidette* differ from typhoid fever as the varioloid does from variola?" He considers that it does so and that it is to this cause that we must assign the relative immunity which the inhabitants of countries often visited by typhoid fever enjoy, and I may add here that this very fact has been observed among the Boers during the present war.

The second outbreak, which took place at Clermont-Ferrand, prevailed from September to December, 1886, and was investigated by Dr. Brouardel and Dr. Chantemesse. This outbreak was "more severe and more generally spread in the southern portion of the town which includes the best quarters." There were two separate outbreaks, not only at Clermont-Ferrand but at Mont-Ferrand, towns two kilometres apart. These outbreaks "had the same course in the two towns and their maximum height was almost on the same days." On the other hand, the outbreak did not attack Royat and Chamalières, two little towns equally near to Clermont-Ferrand, yet the explanation was found in the fact that Clermont-Ferrand and Mont-Ferrand are supplied with the same water, while Royat and Chamalières have each a separate and independent source of supply. It was observed that the persons in the two infected towns who drank only boiled water or mineral water were not attacked, and that in a convent at Clermont-Ferrand supplied by a special fountain in its park there was only one case of typhoid fever and that occurred in the case of a person who had visited her parents and had drunk of the town water-supply. The first outbreak appears to have been caused as follows. In August a woman suffering from typhoid fever lodged in a villa at 35 metres from the water conduit; the cesspool of the house was not watertight and there was a washhouse which discharged its water into a stream passing over the water conduit, but the landlord stated that the visitors' washing was done in the public laundry at Royat, close to which was a water conduit for Clermont-Ferrand, the pipes of which were "made of earthenware in such bad condition that eight days after our inspection at the end of December the municipality of Clermont has thoroughly replaced the earthenware pipes by iron ones." 20 days afterwards typhoid fever broke out in the town, appearing in nearly all quarters at once. The second outbreak, on the other hand, appears to have been caused by the excretal matters of two typhoid fever patients having been thrown out in the street in the month of October "on this soil of lava cracked with

fissures of 20 to 25 metres in depth either at the point where the water of Clermont is obtained or close to it." The second outbreak took place at Clermont-Ferrand and at Mont-Ferrand at the beginning of November and especially towards the middle of the month. The typhoid bacillus was found in the water in the cistern of a house where there had been typhoid fever during the second outbreak. This cistern had not been cleaned for two years and a young girl who drank water from it had an attack of typhoid fever.

The third report, kindly forwarded me by Dr. Brouardel, was on an investigation made by himself and Dr. Chantemesse in 1887 into some outbreaks of the disease in the barracks of the Marines at Lorient. They reported that while the fever raged among the troops the civil population remained almost intact, while during the cholera epidemic in 1866 the population was attacked and the soldiers almost all escaped. It appears that the inhabitants of Lorient and the troops drank water coming from two different places. The causes of the outbreak were stated to be as follows: "The principal cause is the intermittent infection of the drinking-water; the secondary cause is defective installation of the latrines in the barracks. It appears that the excremental matters of the town are collected in moveable pails in which they are carried outside the town and spread upon the fields as manure twice a year, in the beginning of February and during August. This is regularly done by the farmer of the fields, under the surface of which the waters which supply the arsenal collect. The springs under these fields are produced by the rain-water which falls on the neighbouring hills and in the valley above the fields. Sometimes the level of the underground water which forms the spring is only separated from the surface of the soil by a bed of pebbles of a few centimetres in thickness. These waters, which at their point of collection are already polluted, arrive at the arsenal in old pipes which are not watertight. The principal conduit traverses the subsoil of heavily manured meadows and of the garden of the hospital on which the excreta of all the patients are constantly being thrown. In the passage of this conduit across that garden the conditions are such that it is not possible that the drinking-water should not be sometimes polluted. The secondary cause of propagation of the fever is the infection of the air due to the installation of latrines which are mere wooden tubs placed immediately under the windows of the barrack-rooms. As soon as these latrines are infected by typhoid excreta they can spread around the germs of the disease. On the first and second floor of the barracks one window is more particularly situated immediately above the tubs; the three beds placed by the side of this window on the first and second floors have been occupied by soldiers who have all been attacked with typhoid fever. Around them in the same messes of the barracks the victims of the disease were much more widely separated. Thus twice a year human excrement is thrown upon the meadows where the source of water which supplies the barracks of the arsenal springs and twice a year an epidemic of typhoid fever bursts forth. The manuring takes place first in January and February and then in August; the epidemics appear in March and in October or November. The rain is the bond which closely unites these two facts, the manuring of the land and the explosion of typhoid fever." Further proof, if any were necessary, is to be found in the fact that "for some time past in order that the recruits may avoid the dangers of living in the barracks of the arsenal they have been made to encamp on their arrival at the 'Polygone de Lorient' supplied by the town water. While typhoid fever has raged in the arsenal at its ordinary periods there has not been a single case of it among the recruits."

Among instances of the pollution of the water of deep wells are the following. In 1879 (ninth report of the medical officer of the Local Government Board) is a report by Dr. Thorne Thorne of an outbreak of enteric fever at Caterham and Redhill which Dr. Buchanan summarised as follows: "(*b*) Dr. Thorne's investigation of a strongly-marked outbreak of enteric fever at Caterham and Redhill resulted in conclusive proof of the manner of its distribution and was of singular interest as demonstrating how limited a quantity of infective material may suffice under favouring circumstances to do widespread mischief. In one of the wells of the local water company a new adit was being formed and among the workmen was one who during his occupation in the adit suffered from a slight attack, at the time unrecognised, of enteric fever. He, when pressed by diarrhœa, used for his relief a bucket that was provided for raising to the surface the chalk dug from his workplace underground. It was found to be certain that the well-water could thus have become contaminated and there was no suggested way of its contamination by any other means. For the rest, quite satisfactory evidence connected the supply of water from this well with the prevailing epidemic that extended beyond Caterham to Redhill and other localities supplied by the company's water."

In 1889 Dr. Gresswell reported on the prevalence of typhoid fever at Cradley (Worcestershire). He traced the disease to water from a particular well in the sandstone, near which there was an old brick and mortar culvert receiving drainage of houses, while only 20 yards from the further end of a heading in the well and on ground rising somewhat steeply therefrom there was the churchyard. He showed that the defective culvert had received enteric fever discharges and that no doubt by leakage from it the well became infected. (Nineteenth report of the medical officer of the Local Government Board.)

In 1889 Dr. David Page reported on an outbreak of typhoid fever at Houghton-le-Spring (Durham), the cause of which is of exceptional interest. He traced the epidemic to the water of a well or staple sunk to a depth of 330 feet into sandstone strata of the coal measures, and the investigation is of such importance that I quote at length from the end of the report: "In looking around beyond the immediate vicinity of the well for possible opportunities of contamination I had visited early in my inquiry the farmhouse of Herrington Hill. This is situated about three-quarters of a mile to the south of Herrington Colliery on rising ground and about 150 feet above the level of the surface of the well. The farmhouse and buildings are upon the magnesian limestone, the beds of which dip towards the north. Owing to subsidences caused by the colliery workings below fissures extending to the surface exist in this locality. The drainage of the farm buildings, of a cottage, and of the farmhouse itself (in which latter there is a water-closet) is conveyed to a tank. The overflow from this tank escapes and disappears down an adjoining fissure in the ground. To determine whether a connexion existed between this fissure (three-quarters of a mile from the well) at Herrington Hill farm and the water-bearing strata supplying the 'staple' I suggested that common salt should be dissolved and thrown down the fissure. Instructions were given to this effect and two tons of salt were accordingly thrown down on May 11th. At this date the discovery of the 'feeder' in the 'staple' had not been made and testing of the water as pumped from the well did not give any conclusive indication of increase of chlorides. On the discovery of the 'feeder' a week later a clue to the excess of chlorides shown by it (as compared with the body of water in the well) was apparently furnished and, as will presently appear, the source of the chlorides was in the end conclusively demonstrated. From May 24th a series of daily testings of the relative amounts of chlorine in the water of the reservoir and of the 'feeder' were made. The chlorine in the water of the reservoir varied from 2·3 to 2·8 grains per gallon. On May 29th, with a view of placing beyond doubt whether the increase of chlorine thus shown was due to the salt thrown down the crevice at Herrington Hill, five tons of salt were washed down the crevice with a hose-pipe running for twelve hours, during which time it was estimated that some 100 tons of water were discharged. On the following day the chlorine present in the water of the 'feeder' rose to 15 grains per gallon. The testing was continued for a few days longer and on June 5th the chlorine reached the maximum amount of 24 grains per gallon. During the next few days it fell again to the former amount. The connexion between the two localities, the farm tank and the 'staple,' was thus conclusively established and the source of excremental contamination of the water-supply demonstrated. Specific contamination of the sewage from the farmhouse could not, however, be made out, no illness of a character resembling enteric fever having been known to occur at the farm during recent years. It remains to add that since the discovery of the 'feeder' arrangements had been made by Mr. Lishman for the supply to the affected district of water for drinking purposes from wholesome sources. Warnings had been issued to the people against resorting to the tap-water for drinking purposes and it was further decided to abandon the Herrington water as a source for domestic supply. To meet the immediate exigencies of the case and to guard against danger from a continued distribution of this water the Houghton service was

turned on and distributed through the Herrington mains for two hours night and morning. But as this supply was insufficient to meet the requirements of the whole of the district arrangements were made and actually carried out for boiling the supply pumped from the Herrington well before it entered the reservoir. Engine boilers, which were fortunately at hand, were erected and adapted to this purpose, and on June 2nd these arrangements were completed and in operation. On the occasion of my final visit to the district on June 7th I witnessed the remarkable and unique instance of the delivery to the mains of a water-supply which had been actually submitted to a boiling temperature." To fill the water mains of a town with water which had been all boiled was indeed a remarkable and unique experience.

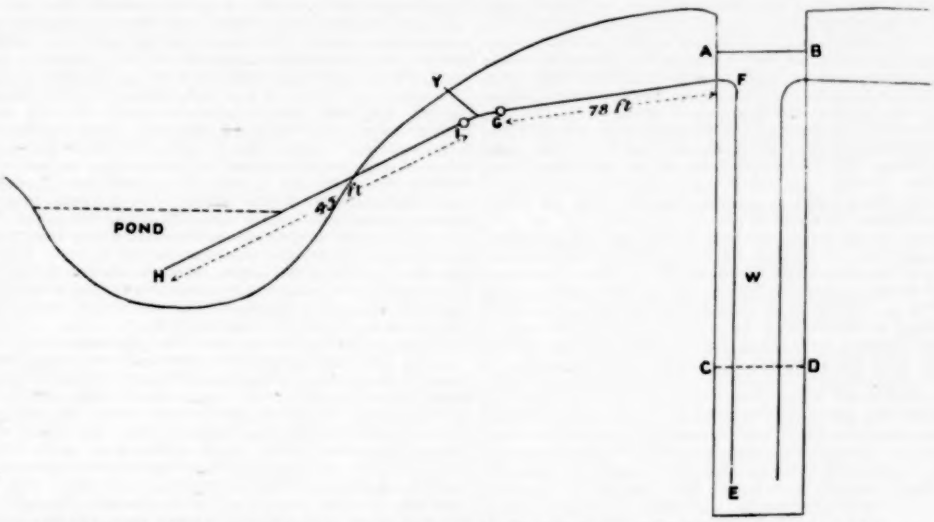
Beverley (Yorkshire).—Water-supply chiefly from borings into chalk which are occasionally found to be polluted by defective drains in their neighbourhood (there were 185 houses supplied by a private waterworks company); other sanitary defects; an outbreak of enteric fever occurred in July, 1884, consisting of 231 cases in 125 households; the main feature of it was that the general water-supply of the waterworks company derived from a deep well in the chalk was specifically contaminated, the company's well and reservoir being in the immediate contiguity to a sewage irrigated field belonging to the East Riding County Lunatic Asylum, in which cases of enteric fever had occurred before the outbreak in Beverley.

Dr. Theodore Thomson reported in 1893 on an extensive outbreak which occurred in the Borough of Worthing (Sussex), where there were no less than 1317 cases with 168 deaths. Of the cases 1257 were in Worthing proper and 58 in West Worthing. The villages of West Tarring and Broadwater were also invaded by the disease. This epidemic was found not to be referable to general sanitary circumstances, to sewerage or drainage, or to milk-supply. The epidemic in Worthing and Broadwater, which have a common water-supply, was shown to be caused by water from a new heading which was contaminated by foul matter from leaky sewers, and this water was shown by bacteriological examination to contain not only abundance of the bacterium coli but also bacillus typhosus itself. The epidemic in West Worthing and West Tarring which were provided with another water-supply appears to have been due to local infection of the water mains.

In 1894 Dr. Thomson also reported on simultaneous outbreaks of typhoid fever and of fever of less definite sort at various places in the Borough of Newport, Isle of Wight. He found that these outbreaks were referable to a public water-supply common to all the invaded places. This water-supply was derived from a well in the chalk at Carisbrook and was found to be open to dangerous contamination from the leaky drains of houses near the waterworks and standing on the chalk, and also from a filthy mill-pond. There was, moreover, serious risk of dangerous pollution of the water in the deeper strata of the chalk supplying the wells, from the existence of numerous cesspools within the area drawn upon by the two wells.

In 1895 Dr. Bruce Low reported on an epidemic of typhoid fever at Raunds (Northamptonshire). There were two distinct groups of cases, each group being "associated with use of water from a different public well that had become specifically polluted. The closing of these two wells, one after the other, was followed by a marked subsidence of the outbreak."

A most interesting and remarkable case of the pollution of a deep well water has come under my notice recently. In a large country house where there had been a case of typhoid fever I found that the main sewer leaked badly into the land drains of the park. A number of these land drains discharged into a pond in the park. The well from which the house was supplied was near to this pond but the pond was watertight and did not leak into it. The well water was generally very good. This well water was pumped to tanks in the mansion, but the same engine and pump also drew water from the pond in question and forced it through another main to the garden, the suction pipes from the well and from the pond meeting in a junction-chamber where there was a stop-cock on each, so that when the stop-cock on one was shut the pump drew from the other. Between the junction-chamber and the pump there was only one suction-pipe, so that the water from the well and from the pond had to pass through this common suction-pipe to get to the pump. The engineer stated that before pumping well water to the mansion he always pumped some of it to the garden in order to wash the common suction-pipe and the pump, but I nevertheless ascertained that when water was being pumped to the house on certain occasions, one of which I observed myself, a very foul smell was forced into the cistern-room and the water was sometimes turbid. The explanation of this is no doubt as follows. The water in the well stands as a rule considerably higher than that in the pond, so that there cannot be any direct communication between them, or the water in the well would leak away down to the level of that in the pond,



When the water level in the well W is at A, B, if the valves G and I are open water runs from the well by pipe E, F, H into the pond, but if the water level is lower than that in the pond, as at C, D, and both valves are left open, the suction-pipe and pump Y being sound, the water in the pond would be siphoned into the well.

which is not the case. When, however, the level of the well water has been considerably reduced by pumping, as is frequently the case, if it so happens that both of the stop-cocks are left open, the two suction-pipes must act as a siphon and the water from the pond be sucked over into the well, and there can be no doubt that the water in the well

has not been infrequently contaminated in this way. (See Diagram.)

Dr. Pistor of Berlin has kindly forwarded me two reports on polluted well waters. One, that of Dr. Mewius of Cosel (Silesia), on an outbreak of typhoid fever which occurred in that town in October, 1899, and was traced to the use of polluted water from the well of one of the hotels in the town[1]; and the other by Dr. Bloch of Beuthen (Silesia) on a serious outbreak of the same disease which took place in that town from June to October, 1897, and was traced to the pollution of the town supply by excremental matters from the mines which filtered through the soil into the wells of the public water-supply after a heavy flood which swamped the mines and washed the fæcal matters out of the pails in the mines before they could be removed.[2]

My friend Professor Kuborn, M.D., of Seraing, Liège, the President of the Royal Society of Public Health of Belgium, has kindly forwarded me a number of reports to the Minister of Agriculture by the provincial medical commissions of that country, from which I find that the spread of typhoid fever there is due (Report for 1891) "for many places to the pollution of the water-supplies, for some to importation and to direct contagion; in these the relations of cause and effect are precise. Lastly, in a more vague sort of manner overcrowding, moisture, and want of cleanliness are alleged causes." That it is due to polluted well-water is not to be surprised at considering that the following is given as a description of the wells supplying the working classes in one of the great towns: "A well surrounded with privies, heaps of manure, and goat-stables furnishes water to all the inhabitants. These come there to obtain the water with vessels which have served for all sorts of purposes. Most of the inhabitants are workpeople employed in the city—a fact which explains the rapid spread of the disease." In another report we are informed that while the water is at fault in some places in others "it is the houses which are at fault, whether by overcrowding or by filth."

In Luxembourg I find from the report of works carried out during 1892 an account of an outbreak at Marcour, "which has for the last 15 years had a public water-supply and which during that time has not been visited by typhoid fever, but the water-supply to the inhabitants was completely spoilt on account of the drought which had laid dry the open end of one of the main pipes drawing water from a stream; various animals having found their way into this pipe died there and the decomposition of their bodies polluted the whole of the water-supply. As soon as this cause of pollution was withdrawn a stop was put to the epidemic. And in another place called Bastogne, where there had not been a single case of fever since 1887, when the public water-supply was established, "the drought having diminished the quantity of water available, the communal authority allowed resort to be made to old wells, recommending the people by placards not to use the water for drinking. But a certain number of the inhabitants took no notice of this warning; 20 days after the reopening of the wells there were 30 cases of typhoid fever; a month later 100 cases, of whom 10 died."

Again, in the report for 1893 we are told that "in the great majority of cases it has been possible to trace the origin of the disease and the causes of the same, which were found almost always indicated. The most frequent by far consists in the pollution of the drinking water due to the defective construction of wells, the filtration of organic matters through their walls, the mixture of spring or river waters with waste waters in a state of putrefaction, of manure deposited on the fields or in the proximity of houses, especially after heavy rains have washed the country, cleansed the streets, and made the cesspits and the water-courses overflow. Next to this came the importation of the disease by individuals, most frequently workmen coming home from an infected locality; direct contagion operating habitually between persons of the same family or living together in small apartments; emanations from foul sewers; and the want of disinfection of the stools of typhoid patients." In the report for 1900 I find it stated that "sometimes typhoid fever is also spread by means of the bad habit which farmers have of throwing typhoid excreta on the dung-heaps. It has resulted that in the spring while spreading the manure on the fields the workmen who had carted the winter manure were infected by the bacilli which had been deposited in the autumn. The manure in preserving its temperature, its humidity, and also certain salts and albuminoids, supplies them with an excellent cultivating medium."

Water-supplies have sometimes been shown to be polluted at or near their springs by infiltration into them of excremental matter, and outbreaks of typhoid fever have taken place when such matter is specifically polluted. Among these are the following.

Bricksworth (Northamptonshire).—Dr. Thorne in 1874 reported that this fever was habitually prevalent and that the water was liable to surface and excremental pollution.

Dr. Hubert Airy reported on an outbreak of enteric fever at Blackburn in Lancashire in 1881 as follows: "This water-supply of Blackburn runs the risk of pollution at its several sources. There is risk at the gathering ground above Pickup Bank; there is risk at the White Birk colliery of some accident similar to that which befell the Caterham well; and there is risk at the well on Revidge, for houses are pretty numerous round about and the soil is a porous sandstone rock. Moreover, as regards the water from Pickup Bank there is risk at very many points along the route by which it is conveyed to the town. The stone culvert ..... is of rough construction, built of the ragstone of the district in rude wedge-shaped lumps, fitted together without mortar or cement, but well bedded in thick puddle; and remembering that this culvert has lain for more than 30 years, only three or four feet deep, on the slope of the hillside, with a constant tendency to increase of pressure on the upper side, and lessening of pressure on the lower side, it can hardly be supposed that the structure is still sound throughout. Indeed, on one or two occasions at different points the crown of the arch has fallen in, and probably at a hundred points it has yielded more or less, so as to admit a leakage of sub-surface water on the upper side." After pointing out that there is danger from the manuring of the ground over the culvert he goes on to say: "There is also the sewage and ordure of Belthorn, the village on the crest of the hill, above the line of the culvert, to be taken into account. At the time of construction of the waterworks Belthorn had no sewer or cesspool, but disposed of its slops and excreta close around the dwellings. Of late years the house-slops have been received in a roadside sewer delivering into a watercourse which formerly was impounded in a little 'lodge' close above the culvert and used to supplement the supply from Pickup Bank. Even to the time of my visit the conduit remained open at this point, but the lodge had long before been emptied by a pipe carried under the culvert. Still, it has occasionally happened that this pipe has been choked with rubbish or with snow and the water has half-filled the lodge before it has been possible to clear the pipe again. The water bailiffs, however, declare that the water in the lodge under these circumstances never reached the open conduit. Again, there are one or two other points *where sewage from Belthorn has to pass over or under the culvert* and where the accident of a defective joint might admit impure water to the latter. The drainage from one row of houses goes into a cesspool on the hill slope. The cesspool sometimes overflows and the liquid runs down a lane and enters a drain which passes under the culvert. Even in the last 20 yards of its course before it discharges into the Guide reservoir the culvert is in manifest danger of receiving soakage from the neighbourhood of a row of cottages (Shorrock's-row) in the village of Guide."

After describing how he found a place where water was leaking into the culvert he continues: "On opening the ground at a corresponding point in the pasture above the men struck upon an old stone land drain which was then traced some distance back and appeared to run obliquely across the meadow from the upper side. Approaching the culvert it ran within nine yards of the last of a row of privy pits which lay outside the bounding wall of the back yards of Shorrock's-row, accessible from the meadow, for the convenience of the farmer who took the manure. The farmer assured me that he spread this manure only on the land below the culvert, never above, but there were signs of the overflow from the privy pits having been conducted on to the pasture above the culvert. The impression left upon my mind, though I could not positively prove the fact, was that there was a probability of soakage from these privy pits and from the slop gutter in front of Shorrock's-row affecting the purity of the water in the culvert. I have dwelt somewhat at length on these dangerous conditions along the line of the conduit because I shall have to show

[1] Zeitschrift für Medizinalbeamte, Heft 19, 1901.
[2] Deutsche Vierteljahrschrift, 1898.

that the chief outbreak of enteric fever in Blackburn followed close upon, and possibly was caused by, the occurrence of enteric fever at Belthorn and Shorrock's-row. The water on leaving the culvert, just within the wall of the reservoir enclosure, runs in an open enclosure for 20 or 30 yards before discharging into the reservoir. An empty can or two lying in this channel showed that it was exposed to casual additions and I noticed just within the gate of the enclosure and immediately over the mouth of the culvert the remains of human ordure. In the side of the open channel is a gate-sluice which, when desired, can be set open so as to divert the stream, or part of it, into an open by-channel which runs down between the Guide embankment and the public road and is finally turned into the lower (Fishmoor) reservoir. In its course it receives the contents of a ditch which, when traced back, is found to take origin at the back of some dwellings in the upper part of Guide village, whence it comes along a cartway trodden and befouled by cattle, past a farmyard, and through a field, exposed in its whole length to the risk of pollution. I heard tales also of mischievous fellows throwing 'nast' (filth) into the reservoirs themselves. The six-foot enclosure wall is easily climbed."

Dr. Airy then shows how one of the privies had been shortly before the outbreak infected by the stools of a man, Aspden, who had typhoid fever and goes on to say: "This case was not visited by the medical officer of health nor by the inspector of nuisances; the danger to the public health *attending the presence of a case of enteric fever so near the main artery of the water-supply was overlooked.* An unskilled labourer who works under the nuisance inspector was sent to the house with some carbolic acid powder. Aspden states that this disinfectant was used to discharges which were then thrown into the privy, one of the row of privies that have their pits opening to the meadow through which the water-culvert passes. Slops and rinsings of vessels undisinfected were thrown down a sink in the backyard or thrown into the road-side gutter in front of the house. Either channel would carry them, as already described, immediately over the water-culvert, at points where it was evident on internal examination that fluid was in the habit of oozing into the culvert. Any such admixture, supposing it to occur, would be infinitesimal in comparison with the quantity of water flowing in the culvert, and that again, in comparison with the whole body of water in the reservoir which received it, would be but as a river flowing into the sea. It certainly taxes the imagination to suppose that so minute a portion of infected matter would suffice to give a poisonous taint to so large a body of water, unless it possessed the property of self-multiplication." (Eleventh report of the medical officer of the Local Government Board, 1881.)

At Rotherham (Yorkshire) and two adjoining districts typhoid fever and "fever of a less definite sort" was again prevalent in 1891–92, and Dr. Theodore Thomson reported that it was "not due to sewerage or drainage, nor to milk-supply, but to a public water-supply common to the invaded parts of each district" and to the high-level section of it, which section was shown to have been similarly related to fever prevalence in previous years. In a subsequent report Dr. Thomson shows that this water was contaminated by being collected from gathering grounds which "contained a great deal of cultivated ground which is manured not only with farmyard but also with privy midden refuse, and sewage from villages as well as from detached houses finds its way into the water-supply, more especially on the high-level gathering grounds."

In 1896 Dr. Bruce Low reported on an outbreak of fever at Penrhynside (Carnarvon). The nature of this disease was "at first obscure; some cases resembled typhus, others cerebro-spinal fever, and a few influenza; ultimately malady regarded as true enteric fever; infection imported. The water-supply was from an extension of the Llandudno water-mains. At the time of the outbreak the pipes were encrusted and partially blocked. There was no evidence of pollution of this public water-supply. The service was scanty and intermittent, "causing the villagers to seek temporary supplies from springs and spouts on slopes of hillside below village. Some of these temporary supplies were most probably polluted by washing of surface filth from village down the slopes by heavy rainfall; hence the spread of the disease."

In 1897 Dr. Bruce Low reported on an outbreak of typhoid fever in the Horsforth Urban District (Yorks.). He found that the gathering ground for the water company was high-lying pasture land dressed freely with stable manure and night-soil and that the sewage from farmhouses and also road washings reached the feeders of supply. "Sand filtration was provided, but in summer months as well as at other times it has been customary to turn on unfiltered compensation water to the town mains to augment supply. Following use in September, 1896, of this unfiltered water there occurred a sudden outbreak of enteric fever in October, attributed by the medical officer of health to polluted water of company's service."

In 1898 he also reported on a sudden outbreak of typhoid fever in December, 1899, in the town of Camborne (Cornwall) and an adjoining parish and village. The only condition common to these three places was their water-supply. "One of the two sources of this supply was from some springs at Boswyn, to augment which section of the supply a pipe had been laid from the brook to the service tank. The brook was *fed freely by surface water* from a hillside on which, in a cottage, four cases of enteric fever occurred in October and November, 1897. The bowel discharges of these cases reached a pond close to the house which had no privy. In wet weather the pond overflowed and the water from it ran down a channel to the brook, entering at about 100 yards above the intake pipe of the Camborne Company. In mid-November the rainfall was excessive and the flood-water washed out the pond and carried the pollution to the brook and thence to the service reservoir. After the removal of the pipe connecting the brook with the reservoir, and after cleansing the service tank and flushing the mains, the epidemic abruptly ceased."

In 1897 Mr. J. S. Davy, Dr. Theodore Thomson, and Mr. G. W. Willcocks were appointed by the Local Government Board to inquire into an epidemic of typhoid fever at Maidstone. This had been already investigated by Mr. M. A. Adams, the medical officer of health, who had come to the conclusion that it was caused by the pollution of some of the springs supplying the water company's water by the excremental matters from a colony of hop-pickers. The arguments used against this view were that there were cases of typhoid fever in Maidstone before the hop-pickers came at all, that many of the public sewers and house-drains and other sanitary appliances were in an extremely defective condition, so that contaminated air from them gained access to the houses, and that after the suspected water was cut off and a further period of 16 days allowed for incubation of any subsequent cases 357 more cases occurred in the town, which could not have been caused by the water—a contention which the inspectors say in their judgment is "in the main a just one," and that therefore the causes which operated to produce them might produce the whole epidemic, a condition which the inspectors admitted "is probably in some degree admissible." Nevertheless, the inspectors came to the conclusion that the epidemic was caused "by the pollution of the water supplied by the Maidstone Company from their Farleigh sources."

(*To be continued.*)

RESULTS OF THE VACCINATION OF 1060 ADULTS.[1]

BY H. SINIGAR, M.D. LOND.,
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VACCINATION statistics are amongst the commonest and best known statistics on medical subjects, yet most vaccination statistics are founded on cases which are seen but twice by the vaccinator. It is somewhat rare for a practitioner to have an opportunity of observing the whole clinical course of vaccination in every individual whom he vaccinates; therefore the results obtained recently at the Metropolitan Asylum, Leavesden, may be of interest, especially at the present time.

It may first be pointed out that only adults (of ages varying from 16 to 95 years) are dealt with, and that most of the cases are revaccinations. This paper dwells more particularly on the clinical aspect of vaccination itself, and little reference will be made to the relationship between small-pox and vaccination. The figures given apply only to the female staff and female patients, a total of 1060 individuals. No very unusual phenomena were observed, but the cases were

[1] A paper read before the Windsor and District Medical Society.

sufficiently numerous, perhaps, to enable some conclusions to be drawn as to the frequency of occurrence of some of the common complications and sequelæ.

Of the material constituting the greater part of these cases it may be said that an asylum population should not be compared with a general one. It is true that, speaking broadly, the patients show to a marked degree a distinct deficiency in their sensory systems, and thus may give little or no evidence of slight disorders; but this is outweighed by the fact that they are remarkably prone to epidemic diseases, and that such diseases amongst them are usually of severe type. On the whole, therefore, it is probable that the results given below will not differ much from those obtained in ordinary practice.

The first important fact noted was the want of uniformity in the potency of different strains of lymph. Much has lately been written upon this subject, and our experience at Leavesden fully confirms the complaints which have been recently appearing in the medical press. Lymph was used from three different sources; lymph from source A proved to be almost inert, lymph B was not much better, but lymph C gave such excellent results that it was at once made the standard supply.

The figures for the female staff are given first separately, chiefly because they serve to illustrate very well the variable potency of lymph A and lymph C. Table I. was compiled after all doubtful cases and failures had been vaccinated at least three times.

TABLE I.—*Showing the Results of Vaccination among the Female Staff.*

	Cases.	Successful.	Unsuccessful.	Percentage of successes.
Primary vaccinations... ...	2	2	0	100
Once vaccinated	82	81	1	98·7
Twice vaccinated	17	14	3	82·3
More than twice vaccinated.	4	4	0	100
Totals...	105	101	4	96·2

The inertness of lymph A was well shown by vaccinating 49 nurses with it; there were only eight successes, 16 being doubtful and 25 complete failures. The 16 cases which were "doubtful" were revaccinated with lymph C, and in every case good vesicles were obtained. The 25 cases of failure were also revaccinated with lymph C when 21 successes were obtained, only four being failures. The potency of lymph C was confirmed by the next 41 vaccinations of the staff with it, all of which were successful.

At the outset a very important question had to be decided—namely, on what grounds should it be deemed advisable not to vaccinate a patient. Small-pox existed in the metropolis and the object of the general vaccination was to prevent the disease making its appearance in the asylum. The important safeguard of stopping the regular visiting to the patients had already been taken, but there still remained the every-day traffic between the asylum and the metropolis and the visits of the friends of those patients who were seriously ill. The weakest patients, therefore, were just those patients who came most in contact with London and were consequently most exposed to possible infection. On these grounds it was decided to vaccinate every patient with one exception—that of a patient who had obviously only a few days to live. It is pleasing to report that the vaccination of these weakly patients produced no untoward effects.

TABLE II.—*Showing the Results of Vaccination among the Female Patients.*

Total cases.	Successful.				Fair or doubtful.		Failures.
	Four vesicles.	Three vesicles.	Two vesicles.	One vesicle.	Four vesicles.	One, two, or three vesicles.	
	890	3	2	1	42	9	
955	896				51		8

Adding the totals of staff and patients together the results are that out of 1060 vaccinations, 997, or 94 per cent., were successful; 51, or 4·8 per cent., were doubtful; and 12, or 1·2 per cent., were failures.

An attempt was made to ascertain the numbers of those who had never previously been vaccinated, and also of those who had suffered from small-pox.

TABLE III.—*Giving the Cases in which there was no Evidence of Previous Vaccination.*

Cases.	Successful.	Failures.	Percentage of successes.
89	87	2	97·7

TABLE IV.—*Giving the Cases of Revaccination only.*

Cases.	Successful.	Doubtful.	Failures.
971	910 (93·7 per cent.)	51 (5·2 per cent.)	10 (1 per cent.)

TABLE V.—*Giving the Cases in which there was Evidence of Small-pox previously.*

Cases.	Successful.	Doubtful.	Failures.
45	40 (88·8 per cent.)	1 (2·2 per cent.)	4 (8·8 per cent.)

With regard to the great majority of the cases nothing more need be said than that they ran a perfectly typical course. Cases of acceleration and retardation of the pocks were observed but unfortunately records of them were not kept. Dealing first with what may be called preventable sequelæ, papules from irritation from the dressings, acne, boils, abscesses, and carbuncles were met with. Such sequelæ depend largely upon the personal cleanliness of the patient; it need hardly be pointed out that in many of the patients personal neglect is the rule, and that such patients, in spite of the vigilant attention of the nurses, will be prone to septic conditions of the skin.

Papules from irritation from the dressings.—These occurred in 24 cases, or 2·2 per cent., and in some the papules became pustular. They began as a rule close to the vaccinated area; another favourite site was over the deltoid, where the skin was rubbed by the bandage. All the cases quickly yielded to simple treatment.

Acne or pustules spreading beyond the vaccinated area.—This condition occurred in six cases. Two began on the tenth day after vaccination, one of which cases involved only the vaccinated arm; in the other case the arm and the leg on the vaccinated side were affected. One case began on the twelfth day when acne appeared on the arms and the trunk. One case began on the fourteenth day with pustules on the arms, the elbows, and the buttocks, and another on the seventeenth day with pustules on the arm and the trunk. All yielded to treatment in from seven to 14 days.

Boils.—These were late sequelæ and were noted in 21, or 2 per cent., of the cases. The earliest case appeared on the tenth day, one appeared on the sixteenth day, four on the twenty-second day, one on the twenty-fifth day, two on the twenty-seventh day, two on the twenty-eighth day, four on the twenty-ninth day, three on the thirtieth day, and three on the thirty-fifth day after vaccination. It is interesting to note that 13 of the cases occurred in the epileptic ward, and the epileptic patients include some of the dirtiest and most troublesome patients in the asylum. None of these patients were taking bromides. As a rule the boils were small and they were nearly all situated on the vaccinated arm and shoulder.

Carbuncles.—Carbuncles occurred in a phthisical patient of very dirty habits. She developed several boils on the back on the twenty-eighth day after vaccination. These she was continually scratching and rubbing, and in a week's time she had one large and two small carbuncles on the back, which required incisions.

Abscesses.—These occurred in four cases. One appeared 20 days after vaccination in the lower half of the posterior triangle of the neck. It was an ill-defined abscess and was

TABLE VI.—GIVING PARTICULARS OF 23 CASES IN WHICH ERYTHEMA FOLLOWED VACCINATION.

Simple Erythema (Four Cases).

No.	Years of age.	Date of the appearance of the rash.	Nature of the rash.	Distribution of the rash.	Duration of the rash.	Condition of the arm.	General symptoms.
1	—	Tenth day after vaccination.	A diffuse blush.	On the arms, the chest, and the legs.	48 hours.	Good vesicles; the arm slightly inflamed.	Temperature 99° F.; pains all over.
2	55	Thirteenth day after vaccination.	A bright-red blush.	On both elbows.	36 ,,	Good vesicles; the arm not inflamed.	None.
3	44	Third day after vaccination.	An erythematous blush.	On the arm and the wrist.	24 ,,	Arm not inflamed; the pocks matured normally.	,,
4	40	Thirteenth day after vaccination.	A bright blush.	On the arms.	36 ,,	Good vesicles; the arm not inflamed.	,,

Erythema of Punctate Type (Three Cases).

1	45	Eleventh day after vaccination.	Closely set vivid red spots of about the size of a pinhead.	On the forearms and the legs.	48 hours.	Good vesicles; the arm not inflamed.	None.
2	25	Thirteenth day after vaccination.	Finely punctate rash; the spots closely set and slightly raised.	On the abdomen and the groins.	36 ,,	Good vesicles; the arm rather inflamed.	,,
3	60	,,	Bright-red punctiform erythema.	On the buttocks, the back, and the elbows.	48 ,,	Good vesicles; the arm not inflamed.	,,

Erythema of Papular or Urticarial Type (Six Cases).

1	26	Sixteenth day after vaccination.	A profuse crop of pale flattened papules.	On the chest and the back.	36 hours.	Good vesicles; the arm not inflamed.	None.
2	—	Eighth day after vaccination.	Small red discrete papules, some surrounded by an erythematous area.	On the arms, the hands, and the legs.	4 days.	Good vesicles; the arm rather inflamed.	Headache and malaise.
3	—	Twelfth day after vaccination.	Fugitive urticaria.	On the arms, the legs, and the trunk.	5 ,,	The arm took very slightly and was not inflamed.	Temperature 103° F.; malaise; itching.
4	—	Eighth day after vaccination.	Discrete red papules.	On the forearm and hand of the vaccinated arm.	48 hours.	Good vesicles (primary vaccination); the arm much inflamed.	Malaise and headache.
5	71	,,	Flat, discrete, pale red papules.	On the elbows, the forearms, and the shoulders.	48 ,,	Good vesicles; the arm not inflamed.	None.
6	73	,,	Flat discrete papules.	On the arms and the shoulders.	48 ,,	,,	,,

Erythema Multiforme (10 Cases).

	60	Tenth day after vaccination.	Irregular blotches of bright red erythema, fading on pressure.	On the arms, the legs, and the buttocks.	48 hours.	Good vesicles; the arm not inflamed.	None.
	44	Eighth day after vaccination.	Large irregular patches of brilliant erythema, diffuse, duller red and not fading on pressure on the legs.	On the arms, the shoulders, the trunk, and the legs.	4 days.	Good vesicles; the arm moderately inflamed.	Malaise for 24 hours.
	71	Ninth day after vaccination.	Bright red blotches.	On the arms, the body, and the legs.	48 hours.	Good vesicles; moderately inflamed.	Slight malaise.
	61	Eleventh day after vaccination.	Brilliant red irregular blotches; next day a dull punctiform rash.	On the arms and the legs.	,,	Good vesicles; not inflamed.	None.
	60	,,	Diffuse vivid red erythema; in parts large irregular blotches.	On the trunk, the arms, and the legs.	,,	,,	,,
	69	,,	Brilliant red papules on the legs; a diffuse red blush on the arms; next day a dull, red erythema on the limbs and fresh papules; on the next day areas of erythema circinata spreading over the trunk.	On the trunk, the face, the arms, and the legs.	6 days.	,,	Loss of appetite; malaise; temperature 100° F.
7	80	Ninth day.	Blotches of bright-red erythema, with slightly raised and well-defined margins.	On the trunk.	48 hours.	,,	None.
8	56	Tenth day after vaccination.	Irregular patches of bright-red erythema and a few papules.	On the elbows, the wrists, and the knees.	48 ,,	Good vesicles; moderately inflamed.	,,
9	54	,,	Vivid red blotches with well-defined and sinuous margins. Fading on pressure.	On the trunk, the legs, and the arms.	48 ,,	Good vesicles; the arm inflamed.	Slight malaise.
10	26	,,	Irregular red patches.	On the arms and the trunk.	36 ,,	Good vesicles; the arm not inflamed.	,,

accompanied by loss of appetite and malaise. In another case a subcutaneous abscess appeared between the pocks on the twenty-fourth day. In another case a few boils appeared on the arm on the twenty-ninth day; these were followed by cellulitis of the arm and suppuration. Lastly, a small superficial abscess occurred in the axilla of a patient on the thirty-second day. All the cases healed rapidly and well after incision.

Reappearance of old skin trouble.—This was noted in a woman who had been long subject to psoriasis. A small patch appeared on the trunk on the thirteenth day; it cleared up in a week.

Eczema.—There were three cases in which eczema appeared. One was that of a nurse in whom a crop of papules appeared on the wrists and forearms on the tenth day after vaccination; the papules rapidly became vesicular. There was no constitutional disturbance and the rash cleared up in a week. In the other two cases a papular eczematous rash appeared 28 and 36 days respectively after vaccination, but lasted a few days only.

Herpes.—In one case a patch of herpes rather larger than a shilling appeared on the cheek 18 days after vaccination. It rapidly cleared up.

Erythemata.—These occurred as simple erythematous blushes, as finely punctate erythemata, as erythema of papular or urticarial type, and as erythema multiforme. In all there were 23 cases, or 2·1 per cent. of the total vaccinations. The erythematous rashes occurred in these cases as a rather later phenomenon than is stated by Acland in Clifford Allbutt's "System of Medicine." He gives the time of occurrence of the erythematous rashes as from the third day up to the time of maturation of the pock. In these cases one appeared on the third day, five on the eighth day, two on the ninth day, five on the tenth day, four on the eleventh day, one on the twelfth day, four on the thirteenth day, and one on the sixteenth day after vaccination. All ages were liable, four cases occurring in patients over 70 years of age. As a rule there was a little constitutional disturbance, but in several of the cases the patients made no complaint. In only one case was there severe constitutional disturbance and that patient recovered rapidly when the rash faded. The average duration of the rash was about 48 hours, but in the severe case above mentioned it lasted six days. Rashes occurred in patients whose arms ran a perfectly aseptic course; they were therefore regarded as a true vaccinial complication—a conclusion, however, which can only be accepted with reserve, as septic absorption gives exactly similar rashes. The rash looked much more alarming than the actual condition of the patient warranted, for in several cases with most vivid rashes there was practically no disturbance of the general health of the patient.

Auto-inoculation.—In five cases there was auto-inoculation. In three there was a small vesicle about one inch distant from the nearest inoculation. In one case there was an outlying vesicle two and a half inches from the nearest inoculation and in another there were two vesicles half an inch away from the nearest original insertion. These vesicles matured at the same time as the original inoculations.

Generalised vaccinia.—Of this condition there was one case in a patient, aged 31 years. Four good vesicles were inspected on the eighth day. On the next day additional vesicles appeared on the arms, the face, and the chest. The vesicles were not compound, were oval in shape, about a quarter of an inch long, and contained pale turbid lymph. Each was surrounded by a slight inflammatory areola and there was some malaise. A few more vesicles appeared in successive crops during the next three days, then they cleared up quickly and well, leaving no scar.

The very slight disturbance of the general health of the patients by vaccination was very noticeable. It was found convenient to vaccinate all the patients in a pavilion on the same day. It therefore happened that there were under observation from 120 to 150 patients in each pavilion and all in the same stage as regards their vaccination. Speaking broadly, it may be stated that the appetites of those vaccinated remained good, the patients looked well, and those of them who were usually engaged in the domestic work of the asylum were able, with very few exceptions, to perform their duties without difficulty. Of the nurses three were sent off duty, one of them being a case of primary vaccination and another was a rheumatic subject whose indisposition was possibly as much rheumatic as vaccinal. The effect produced in the minds of all who observed the cases was that the consequences of vaccination had been unduly magnified by alarmists. Cases, of course, occurred in which there was considerable constitutional disturbance, with headache, pains all over, lassitude, and pyrexia, but they formed a very small proportion of the whole number of cases.

With regard to what may be called the preventable septic complications of vaccination, most will agree that the figures are not unduly high, yet it must be remembered that many of the patients are dirty rather than cleanly in their habits, and are therefore predisposed by their habits to such complications. In ordinary practice these figures should come out very much lower.

It does not require any very vivid imagination to picture the state of an institution such as Leavesden Asylum if small-pox broke out amongst the patients, but no one would have guessed from an ordinary inspection of the asylum that the whole of the patients were down with vaccination. It is very satisfactory to be able to report that although the feeble and the aged patients were all vaccinated yet no unfavourable results followed.

Table V. is of interest in showing the high percentage of successful vaccinations among those persons who had previously had small-pox, a fact which tends to show that vaccination is a better protection against small-pox than small-pox is against vaccination.

With regard to the lymph used, it is important to note that a staphylococcus was grown from it. In spite of this the majority of the arms showed only the inflammatory reaction of vaccinia, so that it is probable that those arms which were much inflamed were infected subsequently to the vaccination. In a few cases, however, it was thought possible that the staphylococci in the lymph were responsible for an inflammatory blush which appeared on the third day at the seat of inoculation and which was accompanied by enlargement and tenderness of the axillary glands and œdema of the arm. The inflammatory symptoms in these few cases subsided before the pock matured and the vaccination afterwards ran a normal course in them. It is most unsatisfactory to know that there is useless lymph on the market—a source of very grave danger both to the public health and to the reputation of vaccination. It should be our duty as medical men to guard jealously the fair fame of vaccination from the slanders of the anti-vaccinationist, and to do this we must vaccinate efficiently. This is not the place to discuss the question of efficient vaccination, but it will suffice to assert that it is possible for revaccination to produce vesicles as typical as those of primary vaccination and in such cases the individual may be regarded as efficiently vaccinated. For this efficient vaccination a potent lymph is essential, and it should be our duty to produce a lymph which we can be sure will always give good vesicles except in those cases protected by previous vaccination, by small-pox, or by natural immunity. The bacteriologist has still to discover the specific active agent of vaccinia; when that has been discovered it may then be possible to use a standardised lymph free from extraneous micro-organisms. It is surely not improbable that in the future there will be vaccinia units injected in known doses and with as little fear of septic complications as there is at present in the injection of antitoxins. The complications of vaccination after all are chiefly due to neglect of surgical principles, and the vast majority of bad arms with their accompanying malaise are preventable.

At this particular season the slight constitutional disturbance caused by an aseptic vaccination cannot be too strongly emphasised, and even weakly people can therefore be told that with suitable care they may be safely vaccinated.

King's Langley.

BRISTOL ROYAL INFIRMARY.—The annual meeting of the governors of this institution was held on March 25th, under the presidency of Sir Charles Cave. The medical report stated that 3246 in-patients had been admitted during 1901, against 2986 in 1900; the out-patients numbered 38,617, compared with 38,671 in the previous year. 410 maternity cases had been attended at the patients' own homes and 417 patients had been sent to the Queen Victoria Jubilee Convalescent Home. The financial statement showed that the total ordinary income for the year amounted to £11,467 and the total ordinary expenditure to £15,252. The total unfavourable balance of the infirmary now amounts to £9332. The committee has made arrangements for the introduction of the Finsen light treatment for lupus. The chairman made a strong appeal for increased financial support.

THE SURGERY OF NON-MALIGNANT GASTRIC ULCER AND PERFORATION.

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(*Concluded from p. 887.*)

GENERAL observations on certain gastric troubles such as erforation and on some operative methods applied in their treatment were published in THE LANCET of March 29th, p. 884. An analytical table was appended. It now remains to describe in detail such of the cases as are not reported elsewhere.

CASE 1. *So-called "spontaneous" rupture of the stomach; excision of the strictured pylorus and the adjacent part of the stomach, which was the site of the rupture, three and a half hours afterwards; recovery.*—The patient, a man, aged 42 years, when admitted on Dec. 15th, 1899, was suffering from severe pain in the epigastrium. The pulse was good but the respirations were rather rapid. The abdomen was moving slightly with breathing, but it was tender all over, especially in the region of the stomach. Liver dulness was present. The patient had suffered from "indigestion" for months, with attacks of vomiting, but he had never brought up blood. He had, however, passed dark-coloured motions (melæna?) and he had suffered from piles. At noon on the day of admission, when lifting something heavy, the patient was seized with a momentary sharp pain in the epigastrium and severe vomiting. He walked indoors and drank some bovril. The pain then became excruciating and it spread all over the abdomen. Dr. A. H. W. Clemow saw him and, diagnosing gastric perforation, gave a quarter of a grain of morphia hypodermically and sent the patient into hospital for operation. Mr. Keetley saw the case at 3.30 P.M. and operated immediately.

Operation.—A four-inch epigastric incision parallel to, and to the left of, the middle line exposed the stomach, which showed a transverse tear three-quarters of an inch long on the anterior surface close to the pylorus, which was itself evidently cicatricially contracted. There was a considerable amount of fluid in the peritoneal cavity (probably bovril, mucus, and serum). The pylorus was slit up longitudinally, when its lumen was found to be narrowed to one-quarter of an inch in diameter. There was no ulceration but cicatricial tissue had taken the place of the muscular coat. Partly because this had led to the rupture and partly because of the possibility of its being malignant it was resolved to excise the pylorus. No enlarged or hard glands were discoverable. The part torn was not obviously diseased at all. The stomach was emptied by passing a rubber tube through the rent and then handed to an assistant. A temporary rubber tube was passed round the duodenum. Excision was performed freely on the stomach side so that the gastric opening was larger than the duodenal. Its superfluous part was sutured up and the remainder was united to the duodenum by interrupted fine silk sutures (sero-muscular only). Before the suturing the abdominal cavity was dried and cleansed by swabs and all its recesses were douched out with hot neutral saline, chiefly by means of a tube passed in through a hypogastric counter-opening. A large drainage-tube was left in a counter-opening in the right loin and shortened from time to time until at last it was removed.

Recovery was uneventful. There was no rise of temperature except on the eighteenth day and again on the twentieth day. The patient was discharged five weeks after admission and was seen to be in good health some months afterwards. The patient was shown at the West London Medico-Chirurgical Society. (The notes are by Dr. J. Matthews Duncan.)

CASE 2. *A patient treated in hospital for chlorosis and gastric ulcer is discharged apparently well but returns in three days with a perforation; laparotomy 24 hours afterwards; complete recovery; health and digestion still apparently good five months after operation.*—The patient, a girl, aged 17 years, was admitted into the West London Hospital on March 31st, 1901, with the following history. She had been discharged from a medical ward only three days before, where she had been treated by milk diet, rest, iron, aloin, and sulphate of magnesia, for chlorosis with possibly gastric ulcer. The brief notes recorded "uninterrupted improvement; abdominal tenderness disappeared." The notes on the blood during this stay were: "hæmoglobin, 45 per cent.; red cells, 3,490,000; white cells, 7000." The patient had never vomited up to that time but had had pain in the stomach after food for seven weeks. On March 30th, after taking a light tea, she went out. Two doors from home, being seized with a violent pain in the left side (gastro-splenic region) and with difficulty in breathing, she returned home and went to bed. She shivered and felt cold. Mr. J. Hepburn gave her a small dose of opium. She slept and "felt better the next morning." She lived opposite to the hospital and Dr. Otto F. F. Grünbaum went over to see her at 3.30 P.M the next day. She would not then acknowledge any abdominal tenderness, but her respirations were rapid, of the so-called hysterical type, her pulse was 104, of good volume and tension, and the liver dulness was diminished in intensity, its lower limit being one or two centimetres above the costal margin. The abdomen, though not distended, "felt firm." "Some collapse" (?). In the left flank there was some dulness, its anterior margin varying with the position of the patient. The temperature was 98·4° F. and the pulse was 108. Taking these facts and the history into consideration Dr. Grünbaum diagnosed perforation of a gastric ulcer. At 5.30 P.M. the breathing was more rapid, the pulse was 110 and not of such good volume as before, the temperature was 102°, and there was slight evidence of free fluid in the abdomen. At 6.30 P.M. laparotomy was performed.

Operation.—Dr. Grünbaum gave an anæsthetic—gas and air, and later oxygen, with occasionally "a few whiffs of ether as a stimulant." A median incision was made above the umbilicus. A few bubbles of inodorous gas or air escaped. There was great distension of both the stomach and the colon, especially of the latter, so great as to necessitate puncture of both in order to make room for further procedures. On passing the fingers between the anterior wall of the stomach and the liver sero-purulent fluid escaped. The anterior wall of the stomach, all along the lesser curvature, from near the pylorus to as far as the œsophageal opening and for a breadth of several inches was plastered over with recent lymph and had evidently been loosely adherent to the liver, encapsuling the fluid which I had just let out. The perforation was not seen; it was probably hidden beneath the lymph which it was not thought advisable to disturb roughly. However, all these parts were carefully swabbed and cleansed and a thin iodoform gauze drain or tampon was spread out a little and passed well back, so as to cover the lymph-coated area. A supra-pubic incision was then made; pus was found in the pelvis and that cavity was carefully swabbed out. Serous or sero-purulent fluid was found in the left flank but not in the right flank. Three rubber drains, each about as thick as the little finger, were placed in the pelvis and through two special lateral incisions in the splenic and right hepatic fossæ of the peritoneum respectively. The right was removed in three days and the others were gradually shortened in a few days more. Feeding by the mouth was not commenced till the twelfth day, but the convalescence was uninterrupted. The gastro-hepatic gauze tampon was removed every two days, several times, on each occasion being replaced by a smaller piece. The tubes were removed and shortened at the same time. On the sixth day the nutrient enemata were returned and the bowels acted in the bed. A pint of hot water was henceforth injected into the rectum an hour before each nutrient enema. All the water was retained. The temperature which was 102° on admission was 101·4° at 6 P.M. the day after operation, and it sank quickly to normal where it remained after the fifth day. The patient remained for five months afterwards free from indigestion or other gastric troubles but still rather anæmic. (The notes are by Dr. O. Inchley.)

CASE 3. *Perforation of gastric ulcer; operation 26 hours afterwards; recovery.*—The patient, a female, aged 21 years, was seen by Dr. D. Fairweather of Wood Green on Dec. 26th, 1901. He immediately sent for Dr. C. O. Hawthorne and a surgeon and after a consultation between those gentlemen Dr. R. S. Dickson, Mr. E. J. Eedle, and myself operation was performed without delay. The perforation had occurred more than 24 hours before. The whole of the lesser cavity of the peritoneum was full of thick lymph patches and fluid, the right flank and the pelvis were full of sero-purulent fluid and a little lymph, and there was one patch of lymph on the

anterior wall of the stomach. After careful swabbing four iodoform gauze drains and one long rubber drain (pelvic) were inserted. Two incisions—epigastric and hypogastric—were made. Recovery was uneventful and the patient is now apparently quite well (12 weeks after operation). This case will be published in full.

CASE 4. *Perforation of a gastric ulcer; operation 26 hours afterwards; recovery.*—The patient, a young woman, aged 24 years, was admitted into the Chislehurst and Cray Valley Cottage Hospital on the morning of Jan. 22nd, 1902, under the care of Mr. Hugh Lawson, and was operated upon on the same afternoon with his assistance and that of Dr. T. M. Callender more than 24 hours after perforation. This case resembled greatly the preceding one, except that the perforation was in the anterior wall, near the lesser curvature, and a little towards the cardiac end. It was closed by two rows of fine silk Halsted's sutures. Swabbing was employed, followed by gauze drains, &c., as in the preceding case. The course of the case was uneventful. The patient is now (six weeks after operation) up and on solid food and is free from pain. This case also will be published at greater length.

CASE 5. *Perforation of a gastric ulcer; peritonitis; operation on the fifth day; afterwards perforation of a second ulcer; parotitis; perihepatic abscess; pleurisy; death on the thirteenth day.*—The patient, a female, aged 23 years, was admitted to hospital on the medical side on Dec. 2nd, 1899, complaining of abdominal pain. On the previous night she had been attacked with severe pain in the left side of the abdomen and she vomited a little brandy which was given. She was sent to bed. She had had dyspepsia off and on for some years but never vomited blood. Next day (Dec. 3rd) the patient did not look ill, except that she was anæmic. There was tenderness in the epigastrium in the middle line. The abdomen was not distended and it moved well. The tongue was clean. The temperature, which on the previous day had been 101·4° F., was on this day 101° in the evening and on the 4th it was 99·8°. But on these two days the patient was getting worse. The abdomen was more distended and tympanitic. The tongue was dry and the pain was worse. The bowels had not been opened since admission. On Dec. 5th Mr. Keetley was asked to see the case and he operated at once.

Operation.—There was a large escape of gas on opening the peritoneal cavity. A small perforation was found in the anterior wall of the stomach which was covered by a good deal of lymph. The lower margin of the great omentum was adherent to the anterior abdominal wall in such a way as to have apparently cut off and protected the pelvis and small intestine from infection, the peritoneum above being covered with lymph. The ulcer was excised and closed by sutures, perforating all coats and tied with the knots inside (through a small incision made on purpose close by and afterwards itself closed). The right flank over the kidney and under the liver was examined with a sponge but no fluid was found. A thin layer of iodoform gauze was placed on the sutured stomach surface and, with a rubber drain, brought out of the wound. Nutrient enemata were ordered. On the day after the operation (Dec. 6th) the gauze was removed. As the skin sutures looked tense some were removed and boric acid fomentations were applied. On the 7th the pulse was rapid. Milk was taken by the mouth as well as by the rectum. The tongue was very dry and cracked. On the 8th the bowels were moved six times through the night (the first motions since before the perforation occurred). The nutrient enemata were stopped and an enema of starch and five grains of Dover's powder was given. "Dressed to-day and condition of abdomen good." On the 12th the patient had developed parotitis on the right side. The mouth was being frequently cleaned with glycerine of borax. The general condition was worse but there was no pain or tenderness in the abdomen. There was a dirty discharge from the wound, seeming to contain bile. There was pain on the right side; a friction rub was heard. There was some dulness at the right base. A subphrenic abscess was suspected but the patient's condition seemed to be too bad for any operation. The pulse was 140, the respirations were 48, and the temperature was 102°. The patient died on the 13th.

Post-mortem examination.—There were an abscess around the right end of the right lobe of the liver and *a second perforation of the anterior wall of the stomach*. There was pus in Douglas's pouch. The intestinal coils on the right side of the abdomen were infected and there was a good deal of lymph between them. In the left flank they were free from peritonitis. That part of the anterior wall of the stomach which was the site of the two perforations was bathed with dirty-looking discharge and covered with lymph. Both openings leaked and the one which was sewn up at the operation had sloughing edges.

Remarks.—When two days before death a dirty, bilious-looking discharge was observed in the wound I ought immediately to have opened it up and searched for the cause. I was held back by one of the two reasons which prevented me from searching for a subphrenic abscess—viz., the bad general condition of the patient who was unfit to take a general anæsthetic or to go through what might prove to be an extensive operation under local anæsthesia. The second perforation certainly took place after the operation, because all that part of the stomach wall in which it occurred was well seen and examined. I think the leakage from it led to the fatal termination by polluting the whole wound and perhaps by percolating down into the right suprarenal fossa. The pus in the pelvis may have been secondary to either the first or the second perforation. It must not be forgotten that this case was not operated on until four days after the first perforation. (The notes are by Dr. Matthews Duncan.)

CASE 6. *A large, ragged perforation of the posterior wall of the stomach; general suppurative peritonitis of both greater and lesser cavities; the patient first seen when moribund on the fifth day; the peritoneal cavity drained and douched with neutral saline solution every two hours; artificial anus (ileum); death 34 hours afterwards.*—The patient, a female, aged 23 years, was admitted into the West London Hospital on Sept. 26th, 1900. The patient was brought into the theatre from outside the hospital in a moribund condition, presenting the appearance of a patient with suppurative peritonitis. The abdomen was as hard as a board. The pulse was 140.

Operation by Mr. Keetley.—The patient was put lightly under ether. An incision was made in the middle line three inches long from the umbilicus down, with two sweeps of the knife. There was no bleeding, only a slight oozing at the venous points. A tube of rubber was put deep down into the pelvis. On either side, at the most dependent part between the ribs and the iliac crest a like incision was made. From the flank wounds to the hypogastric wound drainage-tubes were pulled through by large Spencer Wells forceps till they emerged at both ends. A fourth incision was now made at McBurney's point through which a loop of ileum was drawn, opened, and the edges then sutured to wood-wool pads. The peritoneal cavity was then irrigated with five pints of warm neutral saline solution and the patient was removed to a ward. She was put on milk, soda-water, barley-water, or beef-tea to two ounces hourly, gradually increased to three ounces. There was no vomiting after the operation and flatus was passed both through the artificial anus and the rectum. At intervals of two hours three pints of warm saline solution were irrigated through the drainage-tubes and the dressings were changed. There was no improvement in the pulse, the temperature (about 102°), or the respiration. At 12.30 P.M. the patient started singing for a short time. After that she became rapidly worse, breathing more rapidly, with the pulse running and uncountable. This was 33 hours after operation. The temperature rose to 106·2°, and after death, at 1.30 A.M., to 107·3°.

Post-mortem examination.—The abdominal cavity was filled with foul and purulent fluid. The liver and stomach were covered with the material. Other organs had been partially cleaned by the irrigation. The perforation, which was found on the posterior surface of the stomach near the lesser curvature and nearer the pylorus than the cardiac end, was of the size of a halfpenny, with thick edges. There was a large amount of shreddy material attached to the under side of the diaphragm, just opposite to the corresponding site of the ulcer. There were pleural adhesions over the lower surface of the left lung.

Remarks.—This patient's acute troubles had begun four days before she was seen by me. After warning her friends of the practical hopelessness of the case I had her removed at once to the hospital and I operated as above. She was quite unfit to stand any search for the cause of the peritonitis. The drainage, the douching, and the artificial anus relieved the patient for the time and *might* have saved her had not the mischief been so great around the liver and in the lesser peritoneal cavity and the perforation so large. This is a type of cases which occur every day and are sacrificed by not calling in the surgeon at the first to clear up the diagnosis. It should be contrasted with Cases 1 and 2. It was a mistake

to feed the patient by the mouth, but we were tempted to do it by her depressed state and by the readiness with which she took and retained liquids. (The notes are by Dr J. Catto.)

CASE 7. *Perforation (?) and hæmorrhage; rest and rectal feeding; improvement for 10 days; then death from sudden and severe hæmorrhage.*—The patient, a married woman, aged 28 years, was under the care of Dr. C. F. L. Dixson of Brentford. She had been treated for dyspepsia for some time. After retiring late on April 6th, 1900, she awoke with "agonising pain" in the abdomen and great collapse. She rallied from this, but as the pain and tenderness continued Dr. Dixson got me to see her the next day. We had her removed to the Brentford Cottage Hospital, but eventually refrained from operation partly on occount of her own unwillingness and partly because she steadily improved and because also the symptoms suggested at the worst a strictly localised peritonitis. There was no abdominal or thoracic dulness, only moderate distension and no vomiting. The facial expression became good and the patient became cheerful. She was fed strictly per rectum with three ounces of peptonised milk, strengthened by plasmon, every four hours. Hot fomentations were applied to the left side of the abdomen, where the pain was localised. She seemed to be improving for 10 days. She then "had severe hæmorrhage per rectum and died soon after, conscious to the very end," at 11.40 P.M. on April 16th. There was no post-mortem examination, but there can be little or no doubt that this was a case of perforation of a gastric ulcer occurring while the patient was lying in bed with a nearly empty stomach and causing a strictly localised adhesive peritonitis with little or no extravasation. No signs of abscess or of fluid in any part of the abdomen or the thorax were found in spite of repeated examination, and there is a possibility that the perforation may have been duodenal and altogether extra-peritoneal. Doubtless some large vessel was opened either by progressive ulceration or by sloughing and the patient died, as above related, with copious hæmorrhage from the rectum.[1] (The notes are by the matron of the Brentford Hospital. The temperature chart was accidentally destroyed.)

As this record of my experience of non-malignant gastric cases seen in the last four years is meant to be complete the following case should be mentioned.

CASE 8. *Perforation with the stomach probably empty; refusal of operation by the patient; medical treatment; death ultimately with signs of subphrenic abscess and left pleuro-pneumonia.*—A single woman, about 30 years old, was seen by me about three years ago. She had suffered for some time from chronic indigestion. Soon after the preceding midnight she had been seized with great pain in the abdomen and had collapsed. She had had no food since tea-time, about seven or eight hours previously. After a time she rallied but before the breakfast hour she became worse and collapsed again. A medical man was fetched who placed her under my care. I saw her some hours afterwards. She had then rallied once more but she presented symptoms which convinced me that perforation of, fortunately, a probably empty stomach had occurred. I urged her strongly to permit operation but she obstinately refused. I directed her to be fed wholly per rectum and thought that the case might come to nothing worse than a subphrenic abscess, by which time she might be willing to submit to surgical treatment. She ceased to be under my care. In a few days I learned that she seemed so much better that feeding by the mouth was commenced. In a day or two more the temperature began to rise and she eventually died with signs of subphrenic abscess and pleurisy of the left side and without surgical intervention.

CASE 9. *Chronic abscess or fistula in the left anterior abdominal wall traced to beneath the diaphragm and probably having originated in the perforation of a gastric ulcer, erosion, &c., and drainage; cure.*—The patient, a single woman, aged 30 years, was admitted into the hospital on Oct. 26th, 1896. Five years before she had had an attack which was diagnosed as biliary colic and she was said to have passed gall-stones. Chronic indigestion and anæmia had been present ever since. A second attack of "biliary colic" had occurred some months previously. One week after this (June, 1896) peritonitis came on, and towards the end of the same month "some quarts" of pus escaped from an opening at or near the navel. Six weeks previously (September) the discharge had nearly ceased but what was believed to be rheumatic fever supervened. The fever abated and about the same time or a little afterwards the abscess burst open again, discharged freely, and had done so ever since. The patient had "always" suffered from anæmia and at times from "very severe indigestion and neuralgia." The personal and family history otherwise was unimportant. On admission the patient was seen to be pale and thin. The orifice of the umbilical sinus was exceedingly small. There was an area of dulness to the left of, and below, it. The temperature was normal. The patient was now seen by Dr. L. Dobson who immediately placed her under me.

Operation.—On Oct. 27th I proceeded to operate. A sinus or cavity was traced, extending from two and a half inches to the left of and below the umbilicus, underneath the rectus up to the lower surface of the diaphragm as far as the fingers would reach beneath the edge of the ribs. It contained granulations and much foul-smelling pus. The left rectus was divided and after its anterior wall had been freely slit up the cavity was scraped, swabbed, and douched. Finally, a low counter opening was made and three rubber drains were inserted, two between the stomach and the diaphragm and one from the umbilicus to the counter opening.

With regard to the after-history of the case, there was no pain, the wounds gradually completely healed, and the patient put on weight. She was discharged well on Feb. 3rd, 1897. (The notes are by Mr. Ellacombe.)

CASE 10. *History suggestive of old perforation of the stomach; more or less recovered from without operation; but the patient not really well several years afterwards.*—I may mention that I have had in the period covered by these hospital cases a private case with Mr. H. Scott Elliott and Mr. F. W. Way of Southsea in which the history and symptoms point to a perforation of a gastric ulcer 14 months before with localised peritonitis and left pleurisy. The patient cannot be said to be really well yet, although there is nothing now which would quite justify operation. She suffers a great deal from a recurrent skin rash and has occasionally pain and discomfort in the gastric region. It is now four years since the first onset.

CASE 11. *Gunshot (revolver) perforation of the liver and stomach in an infant suffering from rickets and whooping-cough; a sloughing burn on the heel; laparotomy; death on the eighth day.*—The patient, an infant, aged 14 months, was admitted into the hospital at 9.45 A.M. on May 5th, 1901. At 8.30 A.M. his mother, playing with him, accidentally shot him through the abdomen with a revolver, placed close to him. The bullet was found in the bed by Mr. Herbert W. Chambers who cleaned and dressed the wounds and sent the child into the hospital at once. The child was admitted crying and slightly collapsed. The pulse was 168, the temperature was 96·2° F., and the respirations were 40. He was markedly rachitic and had whooping-cough. The collapse increased and was combated by various usual means, including oxygen inhalation. There were two abdominal wounds, one in the middle line below the apex of the ensiform cartilage, and small, the other large and ragged and in the middle of the left flank. This was plugged with a piece of omentum of the size of a florin. At 11 A.M. the patient vomited blood.

Operation.—At 11.30 A.M. on the day of admission operation was proceeded with. Just sufficient anæsthetic (A.C.E.) was given to allow the abdomen to be opened. The child was placed upon two rubber warm-water bottles and his legs were well wrapped in wool. The surface of the abdomen was cleaned and sterilised. A four-inch incision parallel with the left costal margin and starting from the aperture of the entrance was made. There was blood in the peritoneum and a perforation of the liver (left lobe) was still oozing. This was now temporarily plugged with cyanide gauze. The stomach was brought freely into the wound. It showed a small perforation anteriorly, near the pylorus, and a large one of the size of a shilling and very ragged posteriorly, close to the spleen and greater curvature. The omentum was severely bruised but it showed no visible wound. The gastric wounds were each closed by two rows of Lembert's sutures. The stomach was almost empty and nothing which could be distinctly identified as food could be seen in the peritoneal

[1] This case ought to have been published with the four cases of severe hæmorrhage in THE LANCET of June 8th, 1901, p. 1597; but it was forgotten, doubtless because it was not operated upon. With a case now under the care of Dr. J. Allan of Chislehurst and myself, it makes a total of six *severe* gastric (or duodenal) hæmorrhage cases seen by me in the last two or three years, of which three were not operated upon and in which the patients died, while all the three patients operated on recovered.

cavity, but I think that there was an appearance as of a little mucus and half-digested milk mixed with the blood found and removed. The prolapsed omentum reduced itself and was carefully cleaned. Counter openings having been made in the splenic and suprapubic regions large drainage-tubes were temporarily inserted and the whole peritoneal cavity was douched with hot sterilised neutral saline solution. The peritoneal wound was closed with fine silk and the muscle and skin were sutured with silk-worm gut. The operation lasted just under 45 minutes. An enema of four ounces of peptonised milk was given and the child was put back to bed and well warmed with water-bags. The pulse was 160. At 1.30 P.M. the pulse was 144. The child was warmer and presented a better colour. At 2·30 and at 4.30 P.M. the patient was "doing very well"; the pulse was 130. At 11 P.M. the respirations were 44 and the temperature was 100°. The child was very restless but otherwise he was better. On the 6th the patient was restless but he slept at intervals. The temperature rose to 101·2°, the pulse was 132, and the respirations were 40. The temperature soon sank again to 97·6°. Some "trembling fits" now occurred. Two drachms of milk were administered every hour by the mouth. On the 7th the patient was less restless, there was no vomiting, and he appeared to be comfortable. The temperature was 99°, the pulse was 136, and the respirations were 42. At night the respirations were only 32. The child seemed to be cold and was wrapped in cotton-wool. Whooping-cough returned in the afternoon. On the 8th the patient had had no sleep. The temperatures were 100·2°, 99·2°, and 99·6°, the pulse was 124, and the respirations were 28. The abdomen was soft and not tender. Milk was taken with avidity. On the 9th the patient had passed a quiet night but had had no sleep. The bowels were opened, a partly-formed motion being passed. There were a bad cough and occasional whooping. The temperature was 98·6°, the pulse was 132, and the respirations were 30. The shoulders were raised on a pillow. Another stool—dark and containing a blood-clot—was passed. A nutrient enema which had been administered at five o'clock was returned. After a wash out other enemata were retained. A large blister was discovered on the right heel, probably caused by hot-water bottles, with which he had been carefully warmed since his admission. Great care had generally been taken to wrap them thickly in flannel, but the child's restlessness may have counteracted this. On the 10th a little sleep was gained at intervals. The bowels were opened twice. There was no more blood. There had been no vomiting since the operation. The temperature went up to 102° at 2 A.M.; at 6 A.M. it was 99·4°, the pulse was 128, and the respirations were 32. At 2 P.M. the temperature was 102·2° and the pulse was 154. No coughing had taken place so far on this day. A blister was applied to the heel and the slough was incised beneath. Boric fomentations were employed. On the 11th the patient had slept a good deal but the temperature at 2.30 A.M. had been 104·2°, the respirations 56, and the pulse 140. The child was quiet and he looked as usual except that he was a little paler. At 6 A.M. the temperature was 101·4°; at 12 noon, it was 103·6°, the pulse was 138, and the respirations were 34. At 1.30 P.M. a convulsion occurred. The temperature was 102·8°, the pulse was 160, and the respirations were 52. The convulsions and the rises of temperature were repeated at intervals during the day several times. After 3 P.M. these did not recur. On the 12th the patient was quiet till 7.30 A.M. But then the respirations began to be frequent and at 9 A.M. they were 64, the temperature being 99·6°, and the pulse 132. There were now slight "trembling attacks" and squints were observed. Oxygen inhalations improved the breathing. The abdomen was soft and was moving well. At 10.13 A.M. the child became unconscious and soon afterwards, at 10.50 A.M., he died.

Necropsy.—The organs of the head and chest were normal, except the lungs, which were slightly congested at the base, and the bronchi were rather catarrhal. Examination of the abdomen showed that the intestines were healthy and there was no general peritonitis. The gastric wounds were healthy-looking. There was no leakage. The left lobe of the liver was perforated one and a half inches above and slightly to the left of the notch. The liver otherwise was normal. The whole of the omentum was gathered up into a thick bunch, matted closely to the greater curvature and adjacent to part of the anterior wall of the stomach and adherent at the ends, also to the liver and the spleen respectively. The transverse colon was drawn up close to the lower border of the matted omentum. In the interior of this bunched omentum and in a small cavity of the size of a florin, apparently formed by the adhesion of the omentum to the stomach, was a thin layer of greenish purulent lymph. All the other organs and regions of the abdomen were normal. The slough in the right heel extended down to the bone. (The notes are by Mr. H. H. Stiff.)

CASE 12. *Five years' history of gastric troubles; repeated treatment by rest and rectal feeding followed by relapses; subphrenic abscess drained and cured; slight attacks of hæmatemesis frequently repeated; very depressed condition; gastro-jejunostomy; death.*—The patient, an unmarried woman, aged 28 years, unhealthy and depressed-looking, anæmic, and with much acne on the face, was admitted on Feb. 18th, under the care of a medical colleague, suffering from tenderness in the epigastrium. There was a long history (five years) of pain immediately after food which was relieved by vomiting. Three years previously an abscess appeared below the lower border of the ribs on the left side and it was drained with tubes in the Windsor Hospital. The patient had been several times subjected in hospital to a six-weeks' course of rectal feeding (once to an eight-weeks' course). On each occasion she was relieved for from seven to nine months. She had vomited blood first six weeks previously and six times since, on one occasion half a pint. There was habitual constipation. The periods were scanty and irregular. She was now fed (per rectum chiefly) for 37 days on peptonised milk, beef-tea, barley-water, and occasionally a little brandy and soda-water, also a quarter of a grain of opium three times a day. During all this time she vomited nearly every day, often several times; one day 10 times. The vomit was, as a rule, blood-stained. There was a good deal of pain. The temperature was usually normal; once it went up to 100° F. About 10 days before the end of this period I was asked to see her; but I felt reluctant to operate owing to the depressed and unhealthy-looking appearance of the patient which differed considerably from the aspect of a person suffering only from gastric ulcer and its usual consequences. However, on March 27th it seemed that something surgical must be done, as the patient continued to be in pain and to vomit daily as much as ever.

Operation.—An anterior gastro-jejunostomy was performed. The note says: "Stomach small. Veins were varicose or dilated as if some portal obstruction. No ulcer or thickening or adhesion felt." On opening the abdomen I found the transverse colon distended with solid fæces in large lumps to such a degree as to prove to be a mechanical obstruction to the proceedings of the operation and possibly afterwards to the passage of the contents of the jejunum when a loop of that bowel was brought over and fixed to the stomach.[2] And, further, contrary to my usual custom, I sutured the mucous membrane of the stomach to that of the intestine with a continuous (glover's) suture. To these two factors (one or both) I am inclined to attribute the unfortunate course of the case—vomiting for two days followed by collapse and death.

Post-mortem examination.—An abscess was found between the layers of the stomach wall (an "intramural abscess") around the gastro-enterostomy wound, and spreading from the same centre a localised, adhesive, but probably septic peritonitis in the adjacent part of the abdomen. The anastomosis is vividly described as "looking tight and admirable." The entire colon was full of dry formed fæces—packed. The sequence of events was, I think, as follows. The gastro-enterostomy wound was, like all or nearly all other gastro-enterostomy wounds, not absolutely aseptic, because the stomach cannot be perfectly asepticised. But the close glover's suture of the mucous membrane prevented it from draining either into the stomach or the intestine. A collection of bloody serum formed in the stomach wall. Matters were aggravated by the want of rest caused by the constant vomiting and the vomiting itself was kept up by the suppuration, and possibly also by mechanical obstruction of the jejunum due to the colon being distended with fæces. No ulcer was found post mortem in spite of a careful search by several observers. Perhaps free purging and even a colotomy would have done this patient more good, not only than gastro-enterostomy but also than opium and rectal feeding. (The notes are by Dr. M. V. Dee.)

[2] The entire colon and rectum were found to be packed with fæces post mortem.

CASE 13. *Severe recurrent hæmatemesis; gastro-enterostomy with Murphy's button; recovery.*—The patient was a middle-aged woman, a patient of Dr. James Allan of Chislehurst, the subject of severe recurrent hæmatemesis. With the help of Dr. Allan and of Mr. A. S. St. John (anæsthetising) gastro-enterostomy was performed on Sept. 6th, 1901, with Murphy's button. The Murphy's button was passed per anum, and the patient writes (six months after operation): "I shall come and see you and then you will see how well I look."

CASE 14.—This was a case with an old history of gastric ulcer and of very severe hæmatemesis years before, of chronic dilatation of the stomach, and of *tetany*. Death took place before the surgeon could arrive. It was recorded briefly in THE LANCET of June 22nd, 1901, p. 1789.

CASE 15. *Five years' history of gastric trouble suggesting ulcer; repeated treatment by rest and rectal feeding; temporary benefit; relapse; gastro-enterostomy; retention of the button; its removal by gastrotomy; cure up to date.*—The patient, a girl, aged 15 years, was admitted on Dec 7th, 1900. She was anæmic but was well nourished. She had first suffered from pain in the stomach five years previously. She was put to bed for one month and was kept on milk diet and she got quite well and remained so for a month. Then a relapse was treated in the same way and the cure lasted for a year. She went into service one year previously to admission. After a time the abdominal pain and vomiting recurred. In August, 1900, she was admitted on the medical side of the hospital and was treated for "gastric ulcer," by rectal feeding for 18 days and was discharged after another week on "half diet;" "free from all pain since the fourth day after admission." After another month's domestic service she had her first menstrual period, but her second only a week previously to admission. When admitted she appeared to be well nourished but rather anæmic. She had no appetite and the sight of food caused nausea. Pain came on in the epigastric region immediately after food and lasted for several hours. She had only once raised blood, then she also "coughed up a small clot the size of a finger-nail." Tenderness was marked at two points, both in a line drawn upwards and outwards from the umbilicus, one just under the edge of the ribs and the other midway between the ribs and the umbilicus. On liquid diet the patient lost her pain but when a fortnight after admission she was allowed solids the pain returned severely.

Operation.—The operation, which was performed on Jan. 1st, 1901, comprised a median epigastric incision and an anterior gastro-enterostomy with Murphy's button, the jejunum being opened 20 inches from its proximal end. The pylorus was thickened and was one inch to the right of the middle line. The mucous membrane of the stomach was bright-red in colour. No search was made for an ulcer except in the part of the stomach which easily presented itself. There none could be felt from without. The desire was to make the operation as simple and uncomplicated as possible. On Jan. 2nd during the night there was altered blood in the vomit. Sips of hot water were allowed by the mouth. From then no more vomiting occurred and after the fourth day no pain until the patient was allowed to get up on the 29th. Afterwards pain and tenderness were felt in the epigastrium. The presence of the button in the stomach was suspected. A skiagram was taken but it showed nothing. Ultimately the shadow of the button was plainly seen on the screen and it was removed by gastrostomy. It was found to be still fixed in the gastro-enterostomy opening.

Removal of the button, May 7th.—An aperture was made in the anterior stomach-wall and the gastric half of the button was unscrewed and taken out. The jejunal half could only be extracted by a good deal of manipulation, assisted by notching the opening. The process of extraction left the wall of the gastro-enterostomy opening so thin on one side that a few Lembert's sutures were inserted to back it up. The first aperture was mostly closed by three sutures penetrating all the gastric coats and tied with the knots inside the stomach. The rest was closed by Halsted's suture. The cause of the retention of the button was probably its not having been screwed up quite tight enough. (The notes are by Mr. Stiff.)

The patient was seen recently and she described herself as feeling quite well. She looked bright though she was still rather anæmic.

Three cases of hydrochloric acid poisoning.—These cases form the subject of a paper read before the Royal Medical and Chirurgical Society and published in THE LANCET of Nov. 17th, 1901, p. 1328. Two were suicidal and both of the patients died, one because the case was too advanced for operation and one from progressive ulceration of the œsophagus and gangrene of the lung, about six weeks after I had performed a gastro-enterostomy, which relieved her for a time. The third patient made an admirable recovery after Loreta's operation which removed intense emaciation and other disagreeable and dangerous symptoms due to an enormously dilated stomach. I am convinced that the safety of such cases lies in very early operation combined with special treatment described in the paper referred to.

Four cases of severe gastric hæmorrhage were reported in THE LANCET of June 8th, 1901, p. 1597.

The above 22 gastric cases include all that I have been consulted on *for non-malignant gastric troubles* in the past four years. Gastric symptoms have also been present in cases in which there were adhesions of the omentum, &c., secondary to hernia, or to inflammatory affections of the gall-bladder, or of the pelvic organs. In these cases the prime disease has been treated operatively with success. Incidentally I have seen a few patients with symptoms of gastric ulcer who came to me with lateral curvature of the spine. In these spinal cases the indications for treatment of the stomach seemed to be purely medical and hygienic, combined with attention to the spinal curvature.

Correction.—In the table on page 886 (THE LANCET, March 29th), last column, opposite Case 16. for "gastrostomy" read *gastroenterostomy*.

Grosvenor-street, W.

THE SUPPOSED INFECTIVITY OF DESQUAMATION IN SCARLET FEVER.[1]

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ONE of the many points in connexion with the natural history of scarlet fever calling for further investigation is the supposed infectivity of the desquamation which is so marked a feature of the disease. From the point of view of fever hospital administration the question is one of the first importance, for the prolonged detention of scarlet fever patients which is still enforced in so many hospitals is largely out of deference to the prevailing belief that the presence of any trace of desquamation is evidence of continued infectivity. The view that desquamation is infectious was authoritatively endorsed by the committee appointed by the Clinical Society of London "to investigate the periods of incubation and contagiousness of certain infectious diseases." Its report was published in 1892 and in the conclusions as to scarlet fever it is stated: "(2) ..... Infection certainly persists so long as there is any desquamation and may still be active at the end of eight weeks." The evidence, however, upon which this emphatic and unqualified statement was presumably based was of the scantiest and most inconclusive description. Out of 209 cases received in evidence in connexion with scarlet fever, only three had the slightest bearing upon the question of the infectivity of desquamation. Indeed, I think I am right in saying that only in these three cases was desquamation even referred to. These cases were as follows:—

CASE 24 (communicated by Dr. Murchison in 1878).—On April 1st, 1878, Master P. left school at Wimbledon, on the fortieth day of an attack of scarlatina, for his home at Brighton. Before leaving, desquamation had to all appearances quite terminated, the feet having desquamated twice. Also he had had repeated carbolic acid baths and he had left all his infected clothes behind. After reaching Brighton his face and feet desquamated again and four days after his arrival his mother fell ill with scarlet fever.

CASE 58 (communicated by Dr. Whitelegge).—B., a girl, aged 19, slept one night with a cousin who was undergoing a second desquamation on the feet eight weeks after the original attack. B. had scarlet fever rash four days subsequently.

CASE 64.—A girl desquamating after scarlet fever went to live in a household and a boy, aged five years, had scarlet fever rash five days later.

The details given in the above cases are so meagre that it

[1] Abstract of a paper read before the Epidemiological Society on Feb. 21st, 1902.

is quite possible that there may have been a simple explanation of the conveyance of infection quite independent of the desquamation. It is unnecessary to assume this, however, because it is well known that infection is often carried after prolonged periods of isolation, when there is no discoverable lesion whatever. The committee itself admitted this, for it stated: "It is, however, well shown ..... that a patient who is completely convalescent—so far, at any rate, as would appear on a cursory examination—may yet be, in some way, capable of infecting others." Whilst fully recognising the very valuable and scientific nature of this report as a whole, it is difficult to avoid thinking that the committee's "conclusion" was, in this case, rather the expression of a preconceived opinion than a genuine conclusion arrived at from the evidence examined. Whether or not, however, the committee was justified in coming to this conclusion, there can be no doubt that it was supported in the view which it took by the vast majority of the medical profession.

So firm is the belief that a desquamating patient is necessarily still infectious that actions at law have repeatedly been based upon it as if it were a settled fact. Parents have frequently been prosecuted by corporations and convicted; and, on the other hand, corporations have been sued by parents and mulcted in heavy damages. The most glaring example of vexatious litigation in connexion with this subject is probably that of Jameson *v.* the Metropolitan Asylums Board which occurred in 1896. In this case, according to the report which appeared in the press, a claim was made against the Metropolitan Asylums Board by the secretary of a training school for girls for £13 for expenses in consequence of one of the girls being sent back from hospital still desquamating. The expenses were incurred owing to some of the boarders having to be sent home and the whole house having to be disinfected over again. No one else contracted the disease but a general practitioner had given it as his opinion that the girl was still infectious. The facts proved in evidence were that the patient was discharged after being in hospital 16 weeks. 17 days later she was found to be desquamating on the fingers and toes and was sent again to the hospital on the following day. She was then isolated for a further period of six weeks. The judge said that it was impossible to say that there was carelessness on the part of the hospital medical officers and so gave judgment for the defendants. At the same time he refused costs on the ground that it was a proper case for inquiry. In the face of such cases as these, medical superintendents of hospitals, whatever may be their own convictions, find little encouragement to discharge patients from hospital until all trace of peeling has disappeared. Believing very strongly that this view, although long established, was not supported by experience, I sent five queries to the medical superintendents of the principal fever hospitals in the country, and to a few others whose opinion I believed would command respect—25 in all. These queries were as follows:—

1. Can you adduce any evidence, experimental, statistical, or clinical, tending to prove that desquamating epithelium is, *per se*, a source of infection? 2. Do you consider that too much importance has in the past been attached to desquamation as a source of infection? 3. Does your experience support the popular belief that desquamation after scarlet fever is necessarily an indication that a patient is still infectious? 4. Does your experience lead you to believe that a patient may continue to desquamate, especially on the feet, for some time after he has ceased to be infectious? 5. Does your experience lead you to believe that it is necessary, in order to prevent the spread of infection, that patients, who otherwise are quite ready to leave hospital, should be detained until every visible trace of desquamating epithelium has disappeared?

Of the gentlemen to whom these queries were sent the following 21 favoured me with replies. Dr. J. E. Beggs, Dr. R. A. Birdwood, Mr. R. M. Bruce, Dr. F. Foord Caiger, Dr. W. Gayton, Dr. F. N. Hume, Dr. C. E. Matthews, and Dr. F. M. Turner (all the foregoing are medical superintendents of fever hospitals belonging to the Metropolitan Asylums Board); Dr. P. Boobbyer, medical officer of health and medical superintendent of the Borough Hospital, Nottingham; Dr. J. E. A. Chatelier, medical superintendent of the City Hospital, Birmingham; Dr. E. O. Hopwood, resident medical officer at the London Fever Hospital; Dr. J. T. Kitchin, medical superintendent of the City Fever Hospital, Bradford; Dr. C. B. Ker, medical superintendent of the City Hospital, Edinburgh; Dr. J. Priestley, medical officer of health, Lambeth, formerly medical officer of health and public analyst, Leicester; Dr. H. Meredith Richards, medical officer of health, Croydon, formerly medical superintendent of the City Hospital, Birmingham; Dr. J. W. Washbourn, physician to the London Fever Hospital, &c.; Dr. Meredith Young, medical officer of health and medical superintendent of the Borough Hospital, Stockport; Dr. H. J. E. H. Williams, medical superintendent of the City Fever Hospital, Sheffield; Dr. A. Johnston, physician superintendent of the Ruchill Fever Hospital, Glasgow; Dr. H. R. Kenwood, medical officer of health, Stoke Newington; and Mr. A. E. A. Pearson, medical superintendent of the City Hospital, Leeds.

I have divided their replies into two groups: (*a*) those taking what I will call the "new" view (though I recognise, of course, that it has no real title to the designation); and (*b*) those adhering to the old view, or occupying an intermediate position. The uniformity in the answers in the former group shows, I think, that the points at issue were well appreciated. Practically all the gentlemen in that group, 16 in number, state that (1) they can adduce no evidence that desquamating epithelium is, *per se*, a source of infection; (2) they consider that too much importance has been in the past attached to desquamation as a source of infection; (3) their experience does not support the popular view that desquamation after scarlet fever is necessarily an indication that a patient is still infectious; (4) they believe that a patient may continue to desquamate for some time after he has ceased to be infectious; and (5) they do not believe that it is necessary, in order to prevent the spread of infection, that patients, who otherwise are quite ready to leave hospital, should be detained until every visible trace of desquamating epithelium has disappeared. There is much less uniformity in the answers in the latter group. They are only five in number, and one or two may almost, I think, be said to favour the new view. Judging from the answers which I have received, therefore, it is clear that a great preponderance of expert opinion is contrary to the old and popular view, and it follows that the existing practice of detaining all patients till the last trace of desquamation has disappeared could be safely modified in the direction of considerably shortening the period of isolation.

In suggesting that the desquamation of scarlet fever is not infectious I simply mean that it is not infectious *per se*. The flakes of epithelium given off by a patient still in the infectious stage may naturally be expected to carry the infection as fomites, just as the clothing worn by such a patient or other articles in contact with him would do. On this hypothesis a piece of desquamated cuticle from a scarlet fever patient if sent in a letter through the post might readily convey the disease if the patient from whom it came was still in an infectious state, but the mere presence of desquamation ceases to be any evidence that a patient is still in an infectious state. The real question at issue is, Does the desquamating epithelium contain in itself the infecting elements—i.e., the supposed germs of scarlet fever—in the same way that the scabs of small-pox are believed to do? The pustules of small-pox undoubtedly contain the specific microbes of the disease and it is only to be expected, therefore, that the scabs, the remains of the pustules, should also contain them. This provides a simple explanation of the fact that the "striking distance" of small-pox is such a long one and that its infection is so readily air-borne. In scarlet fever, however, the eruption is an erythema—a process characteristic of chemical poisoning or of poisoning by the chemical products of microbic action rather than of the direct action of microbes themselves. Thus there are erythematous rashes, closely resembling the rash of scarlet fever, after the use of certain drugs and in cases of septic absorption, and these erythemata are sometimes followed by desquamation. Desquamation, much more profuse even than that seen in scarlet fever, follows the eruption of erythema scarlatiniforme desquamativum; yet there is no reason to think that the process in any of these cases is a microbic one. I hold, therefore, that the desquamation of scarlet fever should be regarded as also a non-microbic one.

In the absence of bacteriological evidence, it appears that the only way in which this question can be settled is by specially-collected statistics. A number of cases must be sent out from hospitals still desquamating, but otherwise apparently quite free from infection, and the result compared with that of similar cases in which desquamation has been completed. In a small way I have myself attempted something of the kind, both in Birmingham and in Leicester. My object was to find out whether patients sent out

desquamating were more frequently followed by "return cases." My records in Birmingham covered some 4810 cases during the two-and-a-half years 1894–96. 8·0 per cent.[2] of these were noted as showing some trace of desquamation (principally late desquamation on the feet) at the time that they were discharged. But of the cases which carried out

A TABLE GIVING PARTICULARS OF FIVE "RETURN CASES" ARISING OUT OF 190 PATIENTS DISCHARGED AFTER AN AVERAGE ISOLATION OF 39·1 DAYS.

	Infecting case.			Return case.		
No.	Sex and age of patient.	Duration of infecting case and dates of onset and discharge.	Condition of infecting case at time of discharge* and subsequent health.	Sex and age of patient.	Date of onset of return case.	Interval between discharge of infecting case and onset of return case.
1	Male, aged four years.	41 days—August 25th to Oct. 5th.	"Looks unhealthy." After return home suffered from constant nasal discharge.	Male, aged eight years.	Oct. 15th.	10 days.
2	Male, aged four years.	42 days—August 28th to Oct. 9th.	Crack behind ear not healed.	Female, aged two and a half years.	,, 16th.	7 ,,
3	Male, aged four years.	47 days—Sept. 14th to Oct. 31st.	"Nose better, but not quite right. Still desquamating on feet."	Male, aged three years.	Nov. 5th.	5 ,,
4	Male, aged 11 months.	26 days—Oct. 28th to Nov. 23rd.	"Nose looks suspicious; little discharge."	Male, aged seven years.	Nov. 27th.	4 ,,
5	Male, aged 16 years.	38 days—Oct. 26th to Dec. 4th.	"Sore nose." Sore at home after return for more than a fortnight.	Female, aged nine years.	Dec. 17th.	13 ,,

* As recorded on the bed chart at the time that the patient was "passed."
Note.—The subjects of the infecting cases in Nos. 1, 3, and 4, had suffered from rhinitis whilst in hospital.

infection (by giving rise to "return cases") only 6·5 per cent. had been noted as showing traces of desquamation.

In Leicester during the three months Sept. 14th to Dec. 14th, 1901, I tried the experiment of reducing the minimum stay in hospital to four weeks. The average stay in hospital, including time ill at home, during these three months has been 39·1 days, or counting only time in hospital, 35·3 days (excluding[3] cases which were sent home on account of erroneous diagnosis). In order to obtain this result it was necessary in many cases to "pass" patients prior to completion of all desquamation. The total number of cases sent out was 190 and the number of "return cases" was five. The particulars of these "return cases" are given in the accompanying table.

In only one case was there any desquamation present in the "original" or "infecting" case: this was on the feet, and it was also noted that the patient was suffering from a sore nose, which latter fact alone is, in my experience, amply sufficient to account for the "return case."

An attempt to send patients out of hospital at the end of a month is not, in the present state of public opinion, free from difficulties. There is always, of course, the possibility that "return cases" may occur with patients sent out desquamating, just as there is with patients sent out suffering—let us say—from corns or decayed teeth; and should this happen censure is likely to follow. A medical man is called in and if he finds the least trace of peeling he frequently expresses the opinion that the patient was sent out from hospital too soon.

There is one other point which I must mention. As things are at present the public will readily believe that a patient is still infectious and will continue to take precautions as to isolation, &c., so long as desquamation continues. Shake their faith in this and patients might be running about the streets at the end of 10 days or a fortnight. I fully realise the force of this. What medical officer of health, indeed, has not found it convenient to avail himself of this firmly-established belief? As students of science, however, we ought not to allow such an opportunist consideration as this to obstruct our search after truth. Moreover, our methods and measures for controlling the spread of scarlet fever (based largely upon theories) have not been such a conspicuous success in the past that we need apprehend any very serious consequences from a little modification of them in the future.

In conclusion I may briefly sum up the principal arguments against the supposition that desquamation is infectious, as follows: 1. The absence of evidence supporting it. It is difficult to believe but that if the old supposition were correct, strong evidence of it would ere this have been forthcoming, as is now the case with discharges from the nose and ears. 2. The fact that infectivity begins prior to the onset of desquamation and frequently continues long after desquamation has ceased. 3. The fact that scarlet fever wards, although abounding in desquamating epithelium, are not a danger to neighbouring houses. 4. The fact that the proportion of "return cases" does not appear to be increased amongst patients sent out from hospital still desquamating. On the other hand, the principal argument in favour of the view that desquamation is infectious is the fact that patients still desquamating, but otherwise apparently free from infection, have frequently been known to convey the disease to others. The whole force of this argument disappears, however, when we consider that patients apparently quite free from infection and in whom desquamation has entirely ceased have also been known to convey the disease; moreover, patients still desquamating have frequently mixed freely with others without untoward result.

Leicester.

[2] This percentage was estimated from the records of only 2500 of the cases discharged but the same system of discharging was followed throughout.

[3] There were no deaths to exclude.

THE TOPICAL APPLICATION OF MUCIN IN CERTAIN AFFECTIONS OF THE NOSE, THROAT, AND EAR.

BY WILLIAM STUART-LOW, F.R.C.S. ENG.,
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IN communications to THE LANCET of Sept. 8th, 1900, p. 730, and Oct. 12th, 1901, p. 972, and in papers read before the British Medical Association at the last two annual meetings, I described the beneficial action of mucin when administered in cases of painful digestion, gastritis, and gastric ulcer; and I gave the history of patients from my own practice and that of others who had proved its effectiveness in the alleviation of such painful gastric conditions. In these papers I also pointed out what I think had not hitherto been observed—viz., that almost invariably these stomachic symptoms were accompanied by a more or less pale and secretionless or dry condition of the naso-pharyngeal mucous membrane; and I showed the advantages of applying mucin to the nose and throat as a part of the treatment of these gastric affections. It was also shown that the deficient mucous secretive action of these surfaces was often a persistent and long-standing antecedent of the gastric irritation and an active factor in its causation. Anatomical and physiological facts were cited to prove that normally much mucus is meant to be carried onwards to the stomach to act as a protective against attrition by lumpy food and irritation by the acid gastric juice.

The *bête noire* of nose, throat, and ear practice is the difficulty of successfully accomplishing amelioration of aridity of the mucous linings of these organs and the fact is that to such aridity all the other intractable, disagreeable, and distressful symptoms are due—namely, incrustation, fœtor, ulceration, hæmorrhage, and pain. The lessened mucous flow by causing desiccation causes also the loss of the essential and special nasal functions of smell and the filtration and warming of the inspired air. I claim for mucin that it does more than anything that has yet been tried to relieve the discomfort in mild cases and to mitigate the distress and suffering in the more severe. It is a natural remedy which restores the moisture and maintains it in virtue simply of its hygroscopic properties. I have had ample opportunities of testing the efficacy of mucin in the very extensive and mixed out-patient department of the Central Nose, Throat, and Ear Hospital.

As usual when the pathology of disease is obscure there have been much speculation and many theories put forward to explain the causation of atrophic and dry rhinitis and pharyngitis, and the treatment is, consequently, very unsatisfactory. I will not attempt to solve the pathological problem as to how the dryness and atrophy in these conditions are to be accounted for but will briefly indicate how mucin acts in remedying them. Two researches that I had carried out by Dr. G. L. Eastes of the Laboratory of Clinical Pathology, Queen Anne-street, W., the first two years ago and the second last year, throw much light on how mucin acts. In the first research it was conclusively shown that mucin has a retarding influence on bacterial growth, that sterilised solutions containing mucin remained sterile for a long time on exposure to the air, and that bacteria ceased to grow in culture media when mixed with mucin. This is a very interesting and important fact, as it indicates that nature has in the secretion poured out on mucous membranes provided a ready means for the suppression and retardation of growth of bacteria. In the *British Medical Journal* of March 8th last in the pathological column of recent literature (see Epitome) there is an account (quoted from the *Lyon Médical*) of a research by Professor Fernand Arloing in which this work is repeated in an investigation of the action of "mucidine"—a solution of the mucus of red snails—upon the bacillus of Löffler. From this he concludes that mucidine possesses a bactericidal action and that it retards the growth of other bacteria. The second research proved that mucin is hygroscopic in its action, being about one-fourth as absorbent for water as glycerine is, and that in this way it will act as a moistening agent—gently, slowly, and with lasting effect. According to this investigation 100 parts of mucin absorbed 3·8 parts of water in four hours, while 100 parts of glycerine absorbed 16·3 parts of water in the same time.

When applied locally to the interior of the nose and pharynx mucin has a soothing and emollient action; it moistens the surface and softens incrustations, readily facilitates their removal and prevents their re-formation; it thus also obviates fœtor, which is one of the best points in its favour as a local remedy. Mucin also restores the nasal function of smell by its hygroscopic effect and the filtration and warming functions are also resumed, because in a dry condition the mucous membrane is functionless. Messrs. Burroughs, Wellcome, and Co. have prepared for me a soloid composed of five grains of mucin, five grains of sodium bicarbonate, and one grain of menthol. This is prepared for use by dissolving it in one ounce of sterilised warm water, or, more thoroughly to get more of the mucin into solution I am in the habit of dissolving the soloid in equal parts of sterilised warm water and sterilised warm lime water. This solution may be used to spray, to douche, or to syringe the nose and throat twice daily. The spray should be a coarse one, as otherwise it is liable to get clogged with particles of undissolved mucin. A very good plan to obviate this is to spray warm water at least once a day through the instrument and thus wash it out. If much incrustation has to be got rid of it is well to rub it off with cotton-wool saturated in the warm mucin solution on a mounted prop. In severe and very old-standing cases of atrophic trouble I supplement the local treatment by giving the patient tabloid mucin co. containing five grains each of mucin and sodium bicarbonate internally before and after meals and thus relieve the concomitant gastric irritation and constipation.

I have had very good results in the treatment of dry conditions of the larynx and in cases where there have been incrustations on the laryngeal lining from the use of a spray of warm soloid mucin solution, the discomfort and hoarseness very soon being much relieved. I have at present 10 cases of dry catarrh of the middle-ear with narrowing of the Eustachian tubes and varying degrees of tinnitus and deafness under treatment. I am injecting twice a week a few drops of a solution of the soloid mucin co. of the same strength—1 in 1 ounce of sterilised warm water—into the Eustachian tubes. While the constant and terrible tinnitus of some of these patients has certainly been much relieved—and in some instances this has existed for years and proved quite unamenable to every form and variety of remedy—and the hearing has also improved, I can speak only tentatively of my results as I have not had the cases regarding which I write long enough under observation. The results, however, are distinctly encouraging, especially as the narrowing of the Eustachian tubes has become less evident. Where patients are very sensitive to the solution of the soloid of the usual strength (1 in 1 ounce) I either dilute the solution more or substitute for the soloid the tabloid for internal use. This has no menthol in its composition but I prefer the soloid, as the menthol serves to stimulate the remaining unatrophied mucous glands to secrete.

The substance most generally used at present for intra-Eustachian injection and as a nasal spray in these affections is a liquid oily paraffin with menthol in the proportion of two and a half grains to the fluid ounce. I object entirely to liquid grease in any shape or form for softening and moistening purposes. It is certainly absolutely useless as a moistening agent; indeed, such preparations act inimically, because they clog and paint over the still remaining and half-atrophied mucous glands. Such oily substances should never be thought of for the purposes of relieving a similarly dry condition of the oral cavity and yet they are commonly persisted with in the treatment of nose and throat and ear cases. What is required is a warm alkaline watery solution of mucin as a substitute for the deficient natural secretion and this is just what the solution of the soloid mucin co. supplies. The more potent penetrating effect of the watery solution is proved by the fact that menthol when used to the amount of only one grain to the ounce of the mucin solution is, by some patients, felt to be quite pungent enough in its stimulating action, as compared with the solution of menthol in liquid oily paraffin, in which it can be borne even to five times the strength.

I have found that even long-standing cases of atrophic nasal and pharyngeal trouble do very well, and that the crusts soon cease to accumulate, after regular douching twice daily with solution of soloid mucin co., and that no other irrigations are ordinarily necessary; but there are certainly instances when pus is present in the discharge in which it is advantageous to use just before the mucin douche a lotion of sodium sulphate or a combination of sodium sulphate and bicarbonate for cleansing purposes. I have patients who, after years of suffering from typical atrophic rhinitis with all its horrors of fœtor and discomfort have, after continuous and persistent application of the mucin irrigation, now been able to dispense with treatment to a greater extent than two or three times weekly.

Welbeck-street, W.

Clinical Notes:

MEDICAL, SURGICAL, OBSTETRICAL, AND THERAPEUTICAL.

A CASE OF GANGRENE OF BOTH NIPPLES OCCURRING IN THE PUERPERIUM.

BY RALPH VINCENT, M.D., B.S. DURH., M.R.C.P. LOND.,

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GANGRENE of both nipples occurring in the puerperium is an extremely rare accident. So far as I am aware there is no recorded case at all similar to the one which I am about to describe and I therefore think that it should be published. For permission to report the case I am indebted to Dr. W. S. A. Griffith.

The patient, a single primigravida, aged 23 years, was delivered at Queen Charlotte's Lying-in Hospital on June 3rd.

On the 7th (the fifth day) both nipples were excoriated; they were protected by rubber nipple-shields and were thoroughly dusted with orthoform, which treatment was continued for some days. On the 15th (the thirteenth day) the whole of the front of the chest over the breasts was covered with a dark red rash, uniform in character and papular at the edges. The skin was apparently infiltrated and thickened, slightly œdematous, and very tender; both nipples were excoriated. The patient complained of severe burning pain in the region of the rash and of headache. At this time the question of erysipelas was raised; the general character of the eruption was not altogether unlike that of erysipelas and the spreading margin was suggestive; but with such an extensive attack the patient must have been very ill. As it was she complained of little but headache and the local pain; her general condition was good and quite excluded erysipelas; the temperature was 100·6° F. The infant was taken from the breast and was fed artificially, the milk being withdrawn whenever necessary by the breast-exhauster. The breasts were then bathed with lead lotion. On the 17th (the fifteenth day) the appearance of the skin had not altered but the patient complained of great irritation and the temperature was much higher, being 103·4° at 4 P.M. On the 18th pustules had formed over the whole of the chest and the rash was spreading to the back. On the 19th the nipples were greyish-black and the left one was insensitive; the patient stating that she had "no feeling in it." On the 20th the rash was fading and the itching was less. The patient slept after an injection of morphia. The bases of the nipples were tender and the nipples were black and inclined to bleed. The rash had extended to the buttocks. On the 21st the nipples were definitely gangrenous, the line of demarcation being around the areolæ. The rash on the chest was now much faded, but there were red blotches on the face, chiefly about the nose, the chin, and the forehead. On the 22nd this rash on the face was less and the left nipple had separated, leaving a red granulating surface of about the size of a shilling. The right nipple was sloughing and had nearly separated. On the 23rd the right nipple separated, leaving a similar granulating surface. The rash on the chest had now quite disappeared and the epidermis was desquamating in small flakes; there were still a few blotches on the face. From the granulating surfaces left by the separated nipples pus was discharging freely. On pressing the breasts milk exuded from the openings of the milk-ducts at the base of the ulcers. The progress of healing was uninterrupted and the further history of the case was quite uneventful. The patient left the hospital on July 12th with the ulcers almost completely healed, and on the 18th, when she attended the hospital, they were quite healed. It is an interesting and important feature of the case that notwithstanding the complete destruction of both nipples there appeared to be no obliteration or occlusion of the milk-ducts, so that in the event of a future pregnancy lactation would probably be normal and suckling would be possible by the use of a shield to take the place of the destroyed nipples.

It is impossible to prove the cause of the gangrene, but I suspect that the primary cause was orthoform. A rash has followed the use of this preparation and is, I understand, well known to those who use orthoform in general surgery. Gangrene of the nipples is so unique an accident that one must regard any unusual feature in the case with suspicion. The only unusual feature was the use of orthoform.

Harley-street, W.

A CASE OF SPINA BIFIDA IN A MARRIED WOMAN, AGED 27 YEARS; RUPTURE; OPERATION WITH SUCCESSFUL RESULT.

BY F. FAULDER WHITE, F.R.C.S. ENG., L.R.C.P. LOND.,
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THE patient was admitted to the Coventry Hospital on Jan. 30th suffering from a large swelling over the sacrum, in the centre of which was a dark spot from which oozed a thin fluid. The history of the case, briefly, was that until a few weeks previously the tumour had given little trouble—the patient had even given birth to a child; but from the time that the skin gave way there had been much headache and pain in the thighs. Mr. J. L. Callaghan who was attending the case tried several means to prevent the loss of cerebro-spinal fluid but in vain, and it was decided in consultation to give the woman the chance of cure by operation. On Feb. 2nd I operated. The tumour was of about the size of a large child's head at birth, full of fluid and covered by a very thin skin. Making an elliptical incision I excised about two-thirds of the skin covering the swelling and dissected out the sac. The sacral wall was found to be deficient for about three inches over the spinal canal, there being absolutely no bony covering in this region. No large nerves were found in the sac, most of which was removed. The cut edges of the sac were sewn together and some trouble was taken to draw the tissues over the spinal cavity. The patient suffered at first from great pain in the legs and back. After a few days oozing occurred through some deep stitch-holes. At this time headache was severe. This oozing was undoubtedly of spinal fluid, but after three or four weeks it ceased and the stitch-holes filled up. There is now no trouble of any kind and the wound has consolidated. The patient is up and has lost all pain. She expresses much satisfaction at being rid of a great encumbrance.

Coventry.

ANTI-STREPTOCOCCIC SERUM IN PUERPERAL FEVER.

BY MONTAGUE D. MAKUNA, M.R.C.S. ENG., L.R.C.P. LOND.

As the cases of puerperal fever treated with anti-streptococcic serum which have been recorded are few and far between, I take the liberty to relate in THE LANCET a case which has recently been under my care as it may encourage others to adopt the treatment. The patient, aged 28 years, was in her fourth confinement. She came under observation on Feb. 15th, 1902, the eighth day of confinement. The labour was easy and was attended by a "Gamp" who was probably the source of infection, as she had been attending puerperal patients a little time before. The patient was in a state of prostration; the pulse was quick, of small volume, and it numbered 132 per minute, and the temperature was 104·6° F. in the evening. The lochial discharge was scanty. There were considerable tenderness and some swelling in the right iliac region and over the pubes. The midwife's attendance was at once discontinued and the patient was enjoined to rest in bed and thorough cleanliness of the bed-linen and surroundings was insisted on. A vaginal douche of perchloride of mercury was used every day till recovery. She was given quinine, ergot, dilute hydrobromic acid, and digitalis, in a mixture. The diet consisted of milk, custards, and Mosquera beef jelly, but no stimulants were given. On the next day at noon the temperature was 103·4° and on the following day it was 102·4°, continuing between 102° and 101° till the 23rd. The tenderness in the lower part of the abdomen remained the same and she passed opalescent shreds with each vaginal douche. The case appeared to be a protracted one, as I have seen cases last for from 12 to 16 weeks when the patients recovered. As I am not favourably impressed with intra-uterine irrigation and have seen some harm done by it I did not attempt it, and I know that curettage is positively dangerous. On the 23rd I injected 10 cubic centimetres of anti-streptococcic serum (Messrs. Parke, Davis, and Co.) in the right gluteal region. On the following day the temperature fell to 100°, when another 10 cubic centimetres of the serum were injected. On the 25th the temperature was 99·4°. Vaginal irrigation brought out some lumpy shreds and purulent discharge. The tenderness over the right iliac region was much less. Another injection of 10 cubic centimetres of serum was given. On the 27th the temperature was 99° and 10 cubic centimetres of the serum were injected. On the 28th she passed a copious bloody discharge and some fœtid clots, giving her a grateful sense of relief. The vaginal irrigation was discontinued till the menstrual flow ceased on March 3rd. As the temperature on the last date was still a little above the normal a fifth injection of 10 cubic centimetres of the serum was given. On the 5th the temperature was normal and did not rise again. All tenderness passed away. She was given hypophosphites and a change was made in the diet. On March 24th she was in her usual health. All the injections were made in the gluteal regions, first on one side and then on the other, and were not followed by any after-effects locally or constitutionally. It is possible that

the patient might have recovered without the serum treatment but the disease was certainly cut short by several weeks.
Trehertert.

NOTE ON THE RESULTS OF ANTI-TYPHOID INOCULATION IN THE CASE OF THE FIFTH BATTALION MANCHESTER REGIMENT IN SOUTH AFRICA.

BY A. E. WRIGHT, M.D. DUB.,
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IN view of the dearth of statistics bearing on the incidence of typhoid fever in South Africa in inoculated and uninoculated soldiers respectively the following, for which I am indebted to Lieutenant J. W. West, R.A.M.C., Winburg, Orange River Colony, may not be entirely without interest. The statistics here in question give the results obtained in the case of the 5th Battalion Manchester Regiment for the six months which have elapsed since their landing in South Africa. The figures, which relate to a total strength of 747 men and officers under observation, are as follows:—

	Number.	Cases of typhoid fever.		Deaths from typhoid fever.		Case-mortality.
		Number.	Percentage.	Number.	Percentage.	
Uninoculated...	547	23	4·2	7	1·3	1 in 3·3
Inoculated ...	200	3	1·5	0	—	0 in 3

The three attacks in the inoculated are reported to have been of an exceptionally mild type, contrasting in a striking manner with the severe attacks which occurred in the uninoculated. At the time of sending in the report some of the uninoculated patients were "not yet out of danger."
Netley.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv., Proœmium.

ROYAL PORTSMOUTH HOSPITAL.

A CASE OF TRAUMATIC DISLOCATION OF THE HIP IN A BOY AGED SIX YEARS.

(Under the care of Dr. A. LLOYD OWEN.)

THE rarity of traumatic dislocation of the hip in the young is chiefly attributable to the weakness of the femur as compared with the ligaments of the hip-joint, so that the femur gives way much more readily. It has, however, been seen even in the young, and Erichsen[1] mentions that two cases occurred in his practice; in one the bone was dislocated on to the pubes in a child 18 months old and in the other on to the dorsum ilii in a boy, aged six years. The valuable researches of Bigelow, and still more recently those of Allis, into the methods of production and reduction of this dislocation have thrown much light on the subject. It is interesting to note that even in the time of Hippocrates flexion was considered of importance in the reduction of dislocations of the hip. For the notes of the case we are indebted to Mr. F. P. Connor, late junior house surgeon.

The patient, a boy, aged six years, was admitted into the casualty department of the Royal Portsmouth Hospital on Dec. 23rd, 1901, with the following history: he was kicking a ball in the street with some other boys when suddenly both his feet slipped and he fell heavily to the ground in a position of complete abduction of both legs. He was unable to get up and complained of great pain and he was carried to the hospital. On admission he was found to be a healthy, well-built lad, evidently in great pain. The right thigh was held in a position of partial flexion and adduction and was rotated inwards. The leg was completely flexed on the thigh and was retained in that position by the patient grasping the right ankle with his right hand. The leg was straightened without much pain and the limb was seen to be in the characteristic position of a dorsal dislocation of the hip—viz., flexion and adduction at the hip and rotation inwards of the whole limb. The great trochanter was well above Nélaton's line and the head of the femur was felt distinctly rolling beneath the gluteal muscles on rotating the limb; its position corresponded to the dorsum ilii. Chloroform was administered and reduction was attempted in the usual way, the leg being flexed on the thigh, the latter on the abdomen, and then the limb circumducted outwards and brought down into a position of complete extension. It proved successful on the first attempt and the limb was put up in a long Liston's splint and the boy was admitted into the children's ward under the care of Dr. Lloyd Owen. The patient was kept in bed for a fortnight and then passive movement was carried out; he was quite well at the end of another week. He left the hospital without any shortening, lameness, or impairment of movement.

Remarks by Mr. CONNOR.—Traumatic dislocation of the hip in a child is an accident of sufficient rarity to make the above case of interest. I am able to report the case through the courtesy of Dr. Lloyd Owen.

[1] The Science and Art of Surgery, ninth edition, vol. i., p. 692.

Medical Societies.

ROYAL MEDICAL AND CHIRURGICAL SOCIETY.

The Surgical Treatment of Obstruction in the Common Bile-duct.

A MEETING of this society was held on March 25th, Mr. ALFRED WILLETT, the President, being in the chair.

Mr. A. W. MAYO ROBSON (Leeds) communicated a paper which was read in his absence by the Secretary, entitled "The Surgical Treatment of Obstruction in the Common Bile-duct by Concretions, with especial reference to the Operation of Choledochotomy as modified by the author, illustrated by 60 cases." This paper will be published *in extenso* in a future issue of THE LANCET.

Sir DYCE DUCKWORTH remarked that as a physician he recognised the value of surgical treatment in such cases. Formerly many drugs had a traditional value for the solution or expulsion of gall-stones but he never knew any such methods to be of use. An accurate diagnosis was of very great importance. The symptom of pain did not necessarily mean obstruction. The gall-bladder was only occasionally palpable and they must not wait for this evidence before operation. Physicians could do something to prevent the formation of gall-stones. They were common in persons who were the subjects of the arthritic diathesis. But immediately gall-stones were recognised in the bladder or duct surgical aid should be summoned.

Mr. RICKMAN J. GODLEE congratulated Mr. Mayo Robson on the success of his cases, at the same time regretting his unavoidable absence. He would have liked to ask him concerning the length of the incision. The propriety of joining the gall-bladder to the colon instead of the duodenum was also another question. What was the "scoop" Mr. Mayo Robson referred to? Mr. Godlee then narrated four cases of jaundiced patients in whom bleeding occurred in spite of the fact that calcium chloride was administered. It was the characteristic generalised oozing and in two of these cases the patients died. He wished to emphasise the very septic nature of the material within the common bile-duct and the care which was required to prevent its escape.

Dr. J. H. KEAY congratulated Mr. Mayo Robson on having reduced his percentage mortality but took exception to the statement that nothing could be done by medicinal and general methods, quoting a case in point. Was not oil of any use for the solution of gall-stones? An important question was, How

long was it proper to wait after a patient became jaundiced before operating? It would be interesting to know the subsequent history of Mr. Mayo Robson's cases, the records of which only extended to about 12 months, for recurrence was common.

Sir DYCE DUCKWORTH stated that he had made many experiments but had never found that olive oil had the least solvent effect upon gall-stones. Referring to the question as to the indications for operation the temperature was a most important guide. This rose in cases of impaction and such cases should be operated upon promptly; and this procedure was rendered all the more imperative when it was remembered that gall-stones were frequently a determining cause of cancer starting in the biliary passages.

Dr. H. A. CALEY asked why it was necessary to give such heroic doses of calcium chloride. They were apt, as Professor A. E. Wright had shown, to frustrate the object in view, for they diminished, instead of increasing, the coagulability of the blood.

Mr. A. C. BUTLER-SMYTHE remarked that the length of the incision was a very important point and he doubted if an operation of this character could be completed in 30 minutes. The doses of strychnine used seemed to him to be rather large.

Mr. H. J. PATERSON believed that septic peritonitis was the chief source of danger and he congratulated Mr. Mayo Robson on his avoidance of this complication. It was not apparent from Mr. Mayo Robson's statements that calcium chloride was of much use, but packing with hamamelis had undoubtedly aided in lessening the tendency to hæmorrhage. Some northern physicians seemed to have been educated up to seek surgical aid at an early stage of the disease. He regarded the phrase "the shock of deep anæsthesia" as a fallacy, for the deeper the anæsthesia the less the shock. Ether was not the most suitable anæsthetic for abdominal sections; he reckoned that it resulted in an extra mortality of some 5 per cent. He confirmed the value of strychnine administered hypodermically before and after the operation and referred to a patient who had 40 minims injected in the course of a few hours with benefit.

The PRESIDENT regretted Mr. Mayo Robson's absence. He would have liked to ask in how many cases had the diagnosis of stone in the common duct, which had previously been made, been found to be correct or incorrect? And, again, in how many cases had there been found at the operation some cause for the jaundice other than gall-stones? He (Mr. Willett) had met with cases presenting all the symptoms of stone in which no stone was found. He had also had cases resembling cancer in which he had found a calculus, and he mentioned the case of a man who wasted from 14 to eight stones in weight.

EPIDEMIOLOGICAL SOCIETY.

Infantile Mortality in the Tropics.

A MEETING of this society was held on March 21st, Mr. SHIRLEY F. MURPHY being in the chair.

Dr. C. W. DANIELS read a paper on Infantile Mortality in the Tropics. He did not, he said, propose to consider the causes of that among the children of Europeans but that of the native races, which had hitherto attracted little, if any, attention, though at the present time, when the resources of tropical regions were being developed by European enterprise, the decrease of the native populations and the consequent scarcity of labour acquired especially in Africa the magnitude of an Imperial question. Unfortunately, accurate statistics were not available, but it appeared that in India the deaths in the first year of life varied from 439 per 1000 births in the Central Provinces downwards, but in few districts were they much below 200. In Penang they averaged one-third of the births; in Fiji they formed 35 per cent. of those at all ages; in Freetown in 1897 and 1898 they were 408·8 and 375·7 per 1000; and the deaths under five years of age were 35·67 per cent. of the total; while in Lagos and Sierra Leone the high infantile mortality had already attracted the attention of the authorities. In British Guiana the Registrar-General, Mr. E. A. G. Dalton, showed that the mortality in the first year of life differed among the several races, having been in the year 1894 for Negroes 205, for Europeans 184, and for Indians 155 only. Then 470 negro women had borne 1500 children, of whom 4·91 per cent. had died within the first week, doubtless from the deficient vitality, to which must be ascribed the 20·4 per cent. of stillbirths in the maternity practice of Georgetown Hospital which included all kinds of cases, the majority being normal labours in multiparæ. A high mortality occurred in Guiana about the eighth and ninth days from trismus neonatorum. In Freetown, Sierra Leone, 9·1 per cent. of the children born alive died the same day and 17·6 within the first week. Here, as in Guiana, the number of still-births certified as such was certainly below the truth and the very imperfect certification of the causes of infantile deaths rendered the registers useless. In British Guiana children were largely fed on farinaceous paps and this would account for many deaths, though severe forms of diarrhœa were seldom seen. Diseases of the respiratory organs were rare, small-pox and scarlet fever were unknown, diphtheria was very rare, and measles and whooping-cough were extremely mild. Malarial fevers, however, were a fairly frequent cause of death after the sixth month, and even earlier, a common form being the pernicious cerebral attack, rapidly fatal, with convulsions and coma. If quinine were energetically used speedy recovery followed, but many patients died within two or three hours after admission. The classical symptoms were absent, and if the cause of the convulsions was not recognised the majority of the patients died. Of 1471 deaths under one year of age 158 were from convulsions, which up to the sixth year were largely due to malaria, and in older children malarial affections were attended with coma without convulsions. In Barbados, on the other hand, where there was no malaria, though in consequence of the extreme density of the population, 1096 to the square mile, the negroes emigrated to other West Indian islands, and one-fifth of those in British Guiana were natives of Barbados, the population had increased 6·3 per cent. in 10 years. In India the question of infant mortality was complicated by small-pox, cholera, and famine, but the large proportion of enlarged spleens in persons of all ages dying from other diseases indicated the frequency of malarial fever in early life. In British Central Africa there were no available statistics and epidemics of small-pox occurring every five or six years caused a heavy mortality among children, inoculation being largely practised on adults; but inquiries showed that of 552 children 2·7 per cent. died on the first day; in a very malarious district over 50 per cent., and in one much less so 38 per cent. died before puberty, while enlarged spleens were very frequent. As to the fertility of women in tropical countries it appeared that in Central Africa and in British Guiana the average number of children born alive was five, and the birth-rate among the negroes in Guiana was from 30 to 35, but this did not prevent the decrease of the population. In India that in the Punjab was as high as 43·9, but in Bengal, where it was only 32·81, the deaths exceeded the births by 2·07 per 1000. In Central Africa European administration had reduced the deaths from violence and had abolished the slave trade, but the aggregation of natives on engineering works and from the partial adoption of European modes of living had led to an increase in tuberculosis and syphilis, so that the population showed a general tendency to decrease. To ensure a permanent supply of labour in the Tropics a steady increase of the native population was a necessity, for which the importation of labourers from other districts was but a temporary substitute.

Dr. H. FRANKLIN PARSONS remarked that, owing to the aggregation of the population in towns and the growing neglect of breast-feeding, the infant mortality in this country showed no signs of decreasing and the same causes might be at work among the semi-Europeanised native races.

Dr. C. F. HARFORD-BATTERSBY said that Dr. Daniels had not mentioned infanticide which was very prevalent in Nigeria, where not only all deformed infants but twins and such as cut their teeth in a certain order were crammed into earthen pots and exposed to die; others were poisoned, as probably they were in Sierra Leone where open violence would be punished. In the absence of breast milk the natives never gave that of cows or goats but a pap made of maize, and the usual treatment of any febrile attack was to sweat the child before a large fire and then lay it out in the open air to cool; the fertility of the women was low, though the families of the more civilised were larger.

Dr. PERCY E. ADAMS considered that as to errors of diet matters were worse than in Europe; he had found cow's milk of the greatest value in the famine camps, but that of the

buffalo which only was procurable in many parts of India was very ill-digested, probably on account of the high melting-point of the fat.

Dr. H. T. BULSTRODE said that he would like to know the procedure of the native midwives and whether the savage or the semi-civilised negroes were the more fertile and the more cleanly. [Dr. HARFORD-BATTERSBY: The former.] The paucity or utter want of available statistics was palpable at every turn, and the creation of an Imperial Board of Health on the lines of that at Berlin, which had already done good work in connexion with the health of colonists and natives in East and West Africa, was becoming yearly more necessary for the prosperity of the empire.

After some remarks by Mr. SHIRLEY MURPHY,

Dr. DANIELS replied that whatever might be the case in West Africa the prevalence of infanticide elsewhere had been greatly exaggerated. Livingstone denied its existence around the Zambesi and he had not noticed it in East Central Africa. Twins, indeed, were deemed unlucky, but there was a larger proportion of them than would have been found in Europe among the children brought to be vaccinated, not only those of Christian parents, but of others outside the influence of the mission. The influx of money was not conducive to fertility, for when a man by acquiring our language obtained higher wages he (if he did not adopt our religion) took to himself more wives. Life was easy and labour light; there were few zymotics and yet the infant mortality was high. As to India, he could emphatically deny the alleged practice of female infanticide. In Bengal there were 106 male to 100 female births, but the deaths per 1000 were in the first year 234·38 for males and 191·25 for females, and for those under five years 47·9 and 41·9 respectively.

CHELSEA CLINICAL SOCIETY.

Discussion on the Nature, Origin, and General Principles of Treatment of Cancer.

THE adjourned clinical debate of this society was concluded at the Jenner Institute of Preventive Medicine, Chelsea-gardens, S.W., on March 25th, Dr. C. A. MORRIS, C.V.O., the President, being in the chair.

Mr. D'ARCY POWER said that at the beginning of his work he had concerned himself largely with microscopic appearances because, like many other observers, he had hoped to find the cause of cancer in this manner. He was now rather inclined to despair of this method of investigation. So many histologists had found so many different appearances that the sole result of their work seemed to lie in a better knowledge of the minute appearances of epithelial cells in various stages of degeneration and a more perfect information about certain fungi which though no doubt of value had not brought them any nearer to the problems to be solved. He had therefore directed his attention of late to ascertain whether there might not be an intermediate host to convey the cancer germ, should there be one, from an extrinsic source to the predisposed human beings. There were certain districts in which cancer was more prevalent than in others and these districts lay in a well-wooded country where there were stagnant ponds or sluggish streams. The water-supply did not convey cancer, for it had happened that when two houses had used one well one house had been free from cancer whilst the other had been inhabited by a succession of persons not related to each other who had successively died from cancer. He (Mr. Power) had recently turned his attention to flies as transmitters of disease. Dr. Howard Tooth in his book on his experiences of the war entitled "A Civilian War Hospital" (p. 73) said that it was impossible not to regard flies as most important factors in the dissemination of enteric fever. The flies seemed to have a special attraction for enteric fever patients, so that in a tent full of men all apparently equally ill it was almost possible to pick out the cases of enteric fever by the masses of flies which they attracted. Flies, too, were a known cause of cholera and it had been proved that they were capable of carrying tubercle bacilli on their feet and of voiding them in their excreta. He (Mr. Power) therefore urged the hypothesis that flies might be capable of carrying cancer. If they did so their bodies should contain something tangible and perhaps comparable to some of the many cancer bodies described by different observers. The fly, too, should be able to inoculate. To settle one part of this question was not difficult: so far as the ordinary house-fly was concerned the answer was in the negative. He had devoted some time in making himself familiar with the minute histological appearances met with in the ordinary London house-fly in the autumn. He had also cut sections in the same way of some flies that had been sent to him from a house where there had been an unusual succession of cancer cases during the last three or four years. He had found in them nothing but what was already known and the results of his observations would, he hoped, shortly appear in an illustrated contribution to the *Edinburgh Medical Journal*. The second part of the problem still awaited solution. The ordinary house-fly could not inoculate directly, for its mouth parts were only capable of sipping, yet it was an every-day experience that flies did bite and that they bit more in the later summer months than in the spring, and that the fly which bit looked like a house-fly. The bite was a true bite, for it raised a small papule, though in healthy persons it usually caused no reaction. During the last year Mr. Power had treated three patients for carbuncle who attributed their condition to the bite of a house-fly. He had applied for information to Dr. B. T. Lowne who pointed out that there were two kinds of house-flies, the common house-fly and the stomoxys, the house-fly having harmless mouth parts and the stomoxys being armed with a complete set of lancets. The house-fly was a little the larger and held its head downwards when at rest; the stomoxys had three interrupted whitish stripes on its back and held its head erect. He asked those present who were interested in the question to notice whether it was the stomoxys or the house-fly which abounded where cancer was unduly prevalent, to ascertain from their cancer patients whether they could recollect being nipped by a fly, and, lastly, whether they would send him living specimens of stomoxys from cancer houses that he might have them examined microscopically.

Dr. H. R. GAYLORD and Mr. C. H. ZINK, D.V.S., of the New York State Cancer Laboratory, University of Buffalo, communicated a short note on the Presence of Cancer in Swine, which was illustrated by some microscopical slides. They concluded that it was probable that in old hogs a still greater frequency of malignant tumours might be noted than the proportion which they had found of four tumours among 2000 hogs which included many young animals. They stated that the results of their investigation seemed to be sufficient to show that malignant tumours in swine were not as rare as had been supposed previously.

Dr. R. T. HEWLETT said that the increased use of meat which Sir W. M. Banks considered was coincident with the increase in cancer might resolve itself into a question of over-nutrition, an intake of food in excess of that required for the repair of the natural physiological waste. Such an excessive intake might well be supposed in certain cases to lead to over-stimulation of cells with consequent excessive proliferation, especially in parts in which the cells had been to a certain extent damaged and their normal physiological activities consequently impaired. It would, he said, be interesting to know whether the affluent suffered from the incidence of cancer to a greater extent than did the indigent. If salt were the cause of the development of cancer then sailors of all people should suffer largely from the disease, for they consumed salt pork almost daily and breathed and swallowed salt in the air and spray continually. But the comparative cancer mortality figure for merchant seamen was 60 per 1000 and for fishermen it was 46 per 1000, and those figures did not support the salt diet theory. Concerning the influence of irritation as a cause of cancer it could hardly be doubted that of all places where it might be expected that cancer would occur the udder of the cow would be the most likely, yet it seemed to be unknown in that position. In regard to the nature and origin of malignant disease he pointed out that the metastases which were the dominant characteristics of carcinoma were completely simulated by the metastases which occurred occasionally in chondromata and lipomata. The parasitic theory of the nature of carcinoma was a fascinating one but to his mind it was very far from proved at the present time. Many of the Ruffer's bodies, which were at one time considered to be parasitic organisms, were, he believed, now generally regarded as being of the nature of vacuoles. The reports of the cultivation of the parasite and of the production of cancer experimentally with the pure cultures seemed to him to be unsatisfactory and inconclusive. It was very likely that the

parasite producing carcinoma in man, if there was one, was different from that producing carcinoma in a rat for example, and that therefore the parasite producing carcinoma in man, although actually cultivated, would very probably fail to produce carcinoma in a rat. From the fact that carcinoma could not be inoculated from animals of a different species it was highly improbable that cultures if obtained would produce the disease except in animals of the same species as that from which it was obtained. To his mind the parasitic theory of cancer was not proven, but no one would welcome it more gladly than he should the requisite proof be forthcoming. He could not help feeling that there was more hope of the discovery of a remedy for cancer if it were parasitic than if it were non-parasitic.

Mr. FREDERIC S. EVE said that the changes antecedent to carcinoma could be best studied in superficial structures, skin and mucous membrane. It might be inferred that similar changes occurred in deeper parts although these could not usually be seen. He alluded to a few of these changes with a view to inquiring how they acted as determining causes of cancer. He mentioned epithelioma from mechanical causes, such as clay pipes, jagged teeth, soot, &c.; from chemical causes, such as tar and petroleum; and from inflammatory and septic causes—namely, inflammations of mucous membranes such as leucoma and ichthyosis, old septic ulcers, chronic gastric ulcers, gall-stone, chronic mastitis of the breast and persistent balanitis, and, lastly, granulomata and other lesions due to tubercle and syphilis. Mr. Eve showed several drawings of illustrative cases. In all the cases shown certain conditions favouring the ingrowth of epithelium, which constituted cancer, were found. First, as the result of the antecedent inflammatory process, there was a migration of leucocytes into the corium or mucosa and often into the epithelium itself. By this means the normal boundary between the epithelium and connective tissue was broken down and, further, the lymphocytes and connective tissue cells furnished a granulation tissue into which the epithelial cells could intrude themselves and flourish. The majority of the processes were associated with an ordinary pyogenic or specific organism the products of which, acting for long periods as continuous and abiding irritants to the epithelial cells, stimulated them to active proliferation, altered their potentialities, and ultimately under the favouring conditions the subjacent connective tissues led to their assuming what might best be described as parasitic habits. These facts had a practical bearing—the curing, by operation if necessary, of all these chronic, septic, or specific lesions which might constitute pre-cancerous conditions. There were many examples of carcinoma not connected with "irritation," some of which might be explained by Cohnheim's theory. The cell was the carrier of malignant disease and in its change of nature must be sought the source of cancer. Hope for the future rested with serum-therapy. When a serum or cytotoxin had been produced which would kill spermatozoa and arrest the movement of ciliated epithelium the discovery of a substance which would destroy cancer cells would not be far off. This had been already accomplished by Jansen in the carcinomata of mice which, he (Mr. Eve) had been informed by Dr. Bulloch, had been transmitted by inoculation from mouse to mouse.

Dr. J. GEORGE ADAMI (McGill University, Montreal) contributed to the discussion a paper upon the Parasitology of Malignant Growths. He contended that no other view was possible at the present time than that the typical deciduoma was a syncytioma or chorio-epithelioma malignum. After considering the question in detail Dr. Adami arrived at the following conclusions from a study of the syncytioma malignum: 1. There existed one form of tumour of highly malignant type in which the infiltrating cells were not those of the organism itself but were derived from another organism. 2. The infiltrative and invasive properties were not a new acquirement but were an exaltation of properties normally possessed by them. Under normal conditions there was an interaction of the invasive properties of those cells and the protective properties of the surrounding maternal tissues, by which interaction the extent of the invasion of the cells was strictly limited to the placental site. 3. The development of the syncytioma malignum had, therefore, to be attributed to either an increase in the invasive properties of the syncytial cells, or a lessened resistance on the part of the maternal tissues, or a combination of the two. 4. If micro-parasites played any part in the production of the tumour, that must be either by exalting the infiltrative powers of the one or by lowering the resistant powers of the other. 5. Positive proof of the existence of such specific micro-parasites was still wanting and in its absence it was difficult to conceive how specific micro-parasites could bring about those results. 6. Admitting that micro-parasites and their products were capable of inducing cell proliferation they had also to admit that other external agencies had the same capacity, so that micro-parasites at most might be one of the causes of aberrant cell growth. 7. The prevalent conception of cancer parasites as existing within the cancer cells involved the idea of malignant growths being the products of parasites acting within parasites. As shown by the study of the syncytioma the tumour cells themselves were essentially parasitic in the organism. He was willing to see in the long-continued action of micro-parasites a process which might, like other modes of stimulation, initiate aberrant and neoplastic cell growth, but beyond that point they seemed to be asked to contemplate a most extraordinary state of affairs.

Dr. J. F. PAYNE communicated a paper which dealt only with carcinoma. Many years ago there had been a debate at the Pathological Society of London as to whether cancer was to be regarded as a local or as a constitutional disease. It was now known that a disease might be both constitutional and local and this truth had been established by the study of specific diseases. The question thus raised was not without importance because it drew attention to the truth that cancer, besides being on its anatomical side a growth, had also another side by which it was comparable to specific infective diseases. Recently cancer as a disease had been more studied and pathologists had seen clearly and dwelt forcibly upon the analogies between cancer and infective disease, such as tubercle, syphilis, leprosy, and actinomycosis. If cancer were to be regarded as a specific disease the most convincing argument would be the discovery of its microbe and the proof by experiment that it could produce the phenomenon. But while this proof was still wanting there might be evidence which would justify a certain presumption that cancer was a specific disease. Such evidence, if forthcoming, would fall under three heads: (1) evidence of an initial lesion, of secondary lesions arising from this, and of general intoxication; (2) evidence of communication of the disease from one human being or animal to another, whether of the same species or not, by contagion, inoculation, or any experimental method; and (3) evidence of a specific local or geographical distribution, such as had been demonstrated, for instance, in malaria. It had been abundantly demonstrated that cancer commenced as a local process; it had not, however, been sufficiently considered that in a large proportion of cases the primary seat of cancer had many of the characters of the initial lesion of a specific disease; the chief difference was that the primary focus of disease in cancer was a growth and the primary focus in tubercle and the like was what was called inflammation. The process of forming secondary foci was also different; in tubercle a conveyance of the bacillus from one part to another was sufficient, while in cancer there was a conveyance or metastasis of cells. It must, however, be asked what it was that the transported cells carried with them which enabled them to go on growing and proliferating in the same manner as the primary growth. Was it a changed mode of growth impressed upon the cells of the primary cancer by an unknown cause and transmitted from them to their successors? or was it some small portion of a biological ferment or other substance capable of affecting the mode of growth? or was it a parasitic organism which required to be inclosed within a cell for transmission from one part to another? However these questions might be answered the fact remained that cancer had a primary seat and secondary seats set up by the conveyance of something from the primary seat. There was also general intoxication. The cancerous cachexia was clearly secondary to the absorption of something from the cancer itself. Cancer was not, as a rule, a contagious disease; it did not spread from an affected person to those around and the exceptions to this rule were few in number. The situations of primary cancer were partly external and partly internal. Invasion of the skin was often preceded by so-called chronic irritation, traceable in cancer of the scrotum in chimney-sweeps, in the cancer of petroleum workers, and in cancer of the lips believed to be produced by smoking clay pipes. Another possible path of invasion was by the internal surface of the body, especially by the alimentary tract, and if there were such a means of infection it might

take place through some kind of food. Infection through the respiratory channels, which in many infective diseases formed an important medium, in cancer was of almost no importance. There remained a large class of internal cancers of which the possible connexion with external infection could not be traced—those of internal glands such as the kidney and especially of the reproductive organs in both sexes, including the mammary gland. Broadly speaking, 16 per cent., or less than one-sixth, of all cancers began on the external surface of the body, while 56 per cent. of the total mortality from cancer was due to carcinoma of the digestive organs. In males only 70 per cent., or in some countries 90 per cent., of the cases were those of cancer of the digestive organs. Primary cancer of the digestive organs was nearly always a surface lesion; it rarely began in the parenchyma of any solid organ. If there were any invasion of the body by the unknown cause of cancer all those primary cancers of the internal surface might be regarded, like external cancers, as initial lesions of the specific disease. Assuming that there was no clear evidence of cancer being a communicable disease, it might yet have a specific character if it were shown to be endemic. There was a good deal of evidence to show the local specific prevalence of cancer. It was a familiar fact that cancer was commoner in some countries than in others and in some parts of certain countries than in other parts. On the whole it must be concluded that neither climate, nor soil, nor density of population, nor occupation accounted for differences in the prevalence of cancer—in fact, the distribution of cancer, like that of malaria, seemed to be governed by specific, and not merely by general, physical conditions, though physical conditions might favour the prevalence of cancer as they favoured that of malaria. Another point strongly confirming the view that the distribution of cancer was specific was that in areas of high prevalence this prevalence was not uniform but was made up of a number of smaller areas with unequal rates.

Dr. H. MANDERS described the good results which he had observed in a patient who was considered to be suffering from abdominal cancer after treatment by high frequency currents.

Dr. J. R. LEESON having spoken the PRESIDENT closed the debate with a short speech. He remarked that there was no doubt that professional and public interest was thoroughly excited concerning the subject of cancer. Societies and commissions were being formed in most countries to inquire and to experiment. There was a commission in Germany, of which they had recently heard, and there was the Joint Committee formed by the Royal Colleges of Physicians of London and Surgeons of England, both of which had the subject under consideration. He looked forward to the day when they could treat cancer with as good a hope of success, perhaps by a serum, as they now could treat a case of diphtheria.

After the usual votes of thanks the meeting closed.

NORTH OF ENGLAND OBSTETRICAL AND GYNÆCOLOGICAL SOCIETY.—A meeting of this society was held at Sheffield on March 21st, Dr. S. Buckley, the President, being in the chair.—Dr. J. W. Martin (Sheffield) showed the following: 1. A specimen of a True Fibroma of the Left Ovary removed by abdominal section from a married woman, aged 34 years, the mother of three children, the last of whom was born seven months before the operation. The symptoms had been pain in the left ovarian region, dysmenorrhœa, and occasional dysuria. There was no ascites and the right ovary was healthy and was not therefore removed. The tumour was hard and nodulated and microscopical sections showed nothing but pure fibrous tissue. 2. A large Cystic Fibro-myoma of the Uterus from a patient, aged 24 years, a nullipara. The growth was of the size of a full-term pregnancy and being partly cystic caused much difficulty in diagnosis. The periods had always been scanty and for the previous few months they had been almost absent. The uterine cavity was not enlarged and an ovarian tumour was suspected. On opening the abdomen numerous adhesions required to be separated and the growth was then found to spring directly from the whole breadth of the fundus uteri. The tumour was amputated by flaps before and behind, the vessels were tied, and the stump was sutured. The uterus proper and the ovaries and tubes were left behind. The patient made a good recovery. The structure was that of a fibro-myoma. The occurrence of a growth of this nature at such an age was rare.—The specimens were discussed by Dr. Lloyd Roberts, Dr. Nathan Raw (Liverpool), the President, and Dr. W. Walter (Manchester), and Dr. Martin replied.—Dr. E. O. Croft (Leeds) showed a Uterus of about the size of a cocoanut which he had removed by supra-vaginal hysterectomy from a single woman, aged 39 years, by reason of a gradually increasing menorrhagia and the consequent anæmia. The outline of the uterus was fairly symmetrical but its cavity was found on examination to be very irregular. The specimen showed the unusual condition of a large number of fibromyomata of sizes varying from that of a hen's egg downwards, and all of them being practically of the submucous variety. One growth was becoming polypoid but the os uteri was closed below it. The patient made a good recovery.—Dr. Walter remarked that it would have been impossible to have removed completely the growths apart from the uterus even by incision of the uterine wall and that the operation performed undoubtedly gave the patient the best chance of recovery.—Dr. Croft also showed a large Fibro-myoma blocking the pelvis. The whole mass equalled the size of an eight months' pregnant uterus. The abdominal portion consisted of a spherical subserous growth about nine inches in diameter arising from the upper and anterior uterine wall. The pelvic portion grew from the posterior uterine wall downwards into the pelvis, which it practically filled. The uterine cavity lay more or less horizontally at the level of the pelvic brim and was not much enlarged. The general mass presented a circular groove corresponding to the brim of the pelvis and a depression posteriorly corresponding to the sacral promontory. As the lower growth was subserous it was found possible to raise it from the pelvis and the whole mass was amputated just above the cervix. The stump was sutured and the peritoneum was sutured across the pelvis. The patient had completely recovered. Pressure symptoms had been only slight, but owing to the conditions present a very slight increase in the size of the growth from any cause would have resulted in immediate and serious impaction.—Remarks were made by Dr. Walter and Dr. Lloyd Roberts, and Dr. Croft replied.—Dr. Walter showed the following: 1. A Uterus removed from a patient, aged 59 years. The menopause was passed 14 years previously and during the last two years there had been severe hæmorrhages. The cervix was short and patulous, but the uterus was considerably enlarged and a fungating mass could be felt growing from the fundus and body. The uterus was removed by vaginal hysterectomy. Histological examination proved the growth to be an adeno-carcinoma and a microscopical section was shown. 2. Sections of a Polypus removed from the cervix of a multipara, aged 37 years. The microscopical appearance was that of a round- and spindle-celled sarcoma. He therefore advised the patient to submit to hysterectomy, which was done a few days later. When the uterus was examined a small nodulated mass was found to be involving the mucosa and muscular wall just above the inner os. It had a slightly uneven surface and was of a greyish-pink colour. The microscopical appearance of the nodule was similar to that of the polypus.—Dr. Nathan Raw read a paper on Cæsarean Section Twice and Embryotomy Once in the Same Patient, with remarks on the question of sterilisation under such circumstances.—A discussion followed in which Dr. Lloyd Roberts, Dr. Walter, Dr. Martin, Dr. J. H. Keeling, and the President took part, and Dr. Nathan Raw replied.

BRITISH BALNEOLOGICAL AND CLIMATOLOGICAL SOCIETY.—A meeting of this society was held on March 19th, Dr. J. G. Douglas Kerr, the President, being in the chair.—Dr. Hamilton Cumming, in opening a discussion on Chronic Affections of the Kidney and Morbid Conditions of the Urine arising therefrom in Relation to Balneological, Climatic, and Dietetic Treatment, said that one was apt to connect the word climate in relation to kidney disease with the warmer climates. This was in the main correct, for though in the early stages of tuberculous or suppurative disease a bracing climate might be desirable, yet as soon as the kidney failed in excretory function the conservative influence of the milder climates became imperative. Whilst Nauheim baths were generally contra-indicated, hot baths, hot packs, and Turkish baths were distinctly useful, both by increasing the excretory action of the skin and increasing the peripheral circulation. As the condition of the pulse was the index of the arterial system, so it should be the guide as to diet; meat

and fluid should be diminished where there was increased tension, whilst meat and a more stimulating diet were necessary where the pulse was soft and the heart was failing. The pulse should govern the exhibition of alcohol also. Taking Egypt as the ideal climate, how near and where could they approach it in (1) high mean temperature, (2) low relative humidity, and (3) small daily range? Speaking of Torquay Dr. Cumming said that its climate was decidedly beneficial to most cases of renal disease which was far from common amongst residents. It was his experience that renal cases did better about the sea level than on the hills, and there exercise was possible without undue strain on the crippled circulation.—Dr. G. Oliver (Harrogate) said that he (and he believed the profession generally) regarded high altitudes as unsuitable in granular kidney and more particularly when drifting towards the cardiac termination or when inducing dyspnœa; but on the other hand he believed that altitude was beneficial in cyclical albuminuria. The keynote of climate in chronic renal disease was equable warmth in winter and spring, in this country best illustrated by the south-west coast resorts, such as Torquay and Sidmouth, and abroad by Egypt and by Jamaica which was most promising. The study of blood-pressure was a useful guide in dieting. He strongly advised systematic increase of skin-elimination by heat (Turkish and Russian baths) and by D'Arsonval electrisation.—Dr. Leon Blanc (Aix les Bains) agreed with Dr. Oliver that douche-massage of Aix was good in kidney troubles, principally in gouty patients. It regulated the action of the circulation, diminished the arterial pressure, and put the skin into a better condition. He never gave strong sulphur or alkaline water. Water must be given hot. He considered that the effects of cold and hot water were different. Hot drinks remained in the tissues and dissolved the salts; cold drinks facilitated delimination. Iced or cold water produced congestion in the kidney. Hot or very warm climate must be avoided. An equable and moderately warm climate was desirable. Patients with kidney troubles must not be sent to Aix in July or August, when the climate was too hot.—Mr. A. G. S. Mahomed (Bournemouth) thought that full advantage should be taken of the relief action of the skin. This was more perfect than was always supposed. He had himself recovered urea from the sweat of renal patients. To get the full action of the skin in elimination he considered that the hygroscopic action of warm dry air was needed. For this reason he would choose the climate of Egypt. Unfortunately, home resorts that were warm were also moist as a rule. The dryest and warmest station should be selected.—Dr. McClure emphasised the important rôle which heightened blood-pressure played in the conditions under discussion.—Dr. E. Kingscote said that he considered albuminuria and tube casts to be no certain sign of renal disease.—Dr. G. A. Leon (Sidmouth) said that, in his opinion, the treatment of chronic Bright's disease should aim at eliminating the poison which was the cause of the high arterial tension rather than at merely reducing the rigidity of the vessels. This could best be effected by a mild climate, equable and not too dry; by baths, and in his experience no bath was better than a bi-weekly Russian bath; by diet, especially by abstinence from nitrogenous foods and all alcohol; and by free occasional purging.—Dr. F. Mouillot (Harrogate) said that amongst the most anxious cases in spa treatment were those which, in addition to symptoms requiring treatment, were found to have albuminuria. He, however, drew a marked distinction between cases in which the specific gravity of the urine was high and those in which it was low. The latter were unsuitable for powerful waters or large quantities, whilst the former were often greatly benefited by such treatment.—Dr. J. Groves (Carisbrooke) made some remarks and recommended the climate of Jamaica for renal cases.—The discussion was adjourned to April 16th.

SOCIETY FOR THE STUDY OF DISEASE IN CHILDREN.—A meeting of this society was held on March 21st, Dr. H. Ashby (Manchester) being in the chair.—Dr. A. E. Sansom showed a case of Hodgkin's Disease in a girl, eight years of age. The glands on the left side of the neck were greatly enlarged and the spleen occupied the left half of the abdomen. The child was anæmic and the leucocytes were deficient. The disease started four years previously subsequently to measles.—Dr. R. Hutchison remarked upon the tuberculous nature of several examples of the disease which he had examined and upon the impossibility of determing post mortem from the naked eye whether they were tuberculous or not.—Dr. A. Morison and Dr. W. H. Kelson commented upon the case and Dr. Sansom replied.—Dr. F. Harcourt Gervis showed a case of Double Aortic Disease in a boy, aged 13 years, in whom a presystolic murmur was present at the apex.—Dr. Sansom thought that the presystolic murmur did not indicate mitral stenosis but was an example of Flint's murmur.—Dr. Morison was of opinion that pericardial adhesions were partly responsible for the enlargement of the heart and spoke of the propriety of surgical interference in selected cases.—Dr. Theodore Fisher (Bristol) considered that pericardial adhesions to the chest wall did not produce cardiac enlargement and consequently thought that surgical interference would be inadvisable even if the case could be diagnosed.—Dr. Harcourt Gervis replied.—Mr. Arnold Lawson and Dr. G. A. Sutherland showed a case of Congenital Proptosis in a child three years of age and thought that it was due to imperfect development of the base of the skull and the orbital plates.—Mr. W. H. H. Jessop discussed the case and agreed with the diagnosis.—Dr. Hutchison said that he had a similar case under his care.—Dr. E. Cautley referred to the high palatine arch in the case.—Dr. Sutherland in reply thought that whatever mental defects were present were only apparent and were due to defective hearing consequent upon the presence of post-nasal adenoids.—Dr. H. Campbell Pope showed a case of Infantile Scurvy in a female infant, aged eight and a half months, who had been fed on patent foods and had developed hæmaturia, periosteal hæmorrhages, and gingivitis. The symptoms had started three months before. The existence of hæmaturia had suggested the presence of renal calculus and the child had been examined by the x rays.—Dr. George Carpenter read a paper on a case of Scurvy in a Rickety Boy, aged five and a half years. The gums were affected and the child's dietary, owing to his curious tastes, was very defective. Dr. Carpenter discussed the etiology of scurvy and called attention to the difficulty which was experienced in arriving at a definite conclusion as to the exact causation of these cases.—Dr. Sutherland said that in his experience the prognosis was often grave.—Dr. Cautley discussed the question from the point of view of infant feeding and thoroughly endorsed the remarks made by Dr. Sutherland on the injurious effects of patent foods.—Dr. C. W. Chapman called attention to the value of fresh milk.—Dr. Ashby spoke as to the obscurity surrounding the causes of infantile scurvy.—Dr. Fisher thought that in fatal cases death might be due to secondary infection.—Dr. Carpenter replied.—Mr. W. P. Montgomery (Manchester) showed a specimen of an Inverted Meckel's Diverticulum which had formed the apex of an ileo-colic intussusception. The condition was, he stated, a rare one, there not being more than six cases on record.—Dr. Fisher showed a specimen of Congenital Disease of the Heart from a child, aged four months, in which a wide communication was present between the aorta and pulmonary artery, and attached to both pulmonary and aortic valves were large vegetations. Dr. Fisher also showed a Stomach from a case of Diphtheria in a child, aged three years, which was dotted over with numerous petechiæ; there were no petechiæ elsewhere, the large intestine excepted. There had been hæmatemesis two days before death.—Dr. Ashby read a paper upon a case of Combined Empyema and Purulent Peritonitis. A girl, aged eight and a half years, was seized with vomiting and diarrhœa followed by pleuro-pneumonia and peritonitis. An empyema and suppurative peritonitis followed. Pneumococci and the micrococcus tetragenus were found in the pus of the empyema and the micrococcus tetragenus in the peritoneal pus. The girl made a good recovery.—Dr. Sansom complimented Dr. Ashby on his paper.—Dr. Fisher said that he had made post-mortem examinations of cases of combined pleural and peritoneal infections due to the pneumococcus and other organisms.—Dr. David Nabarro called attention to the pathological records of the Evelina Hospital for the past year of cases in which peritonitis was associated with empyema.—After remarks by Dr. H. J. Simson and Dr. E. W. Goodall Dr. Ashby replied.

WINDSOR AND DISTRICT MEDICAL SOCIETY.—The sixth meeting of the session of this society was held on March 25th, Mr. W. B. Holderness, the President, being in the chair.—The President exhibited two cases of Functional Disturbance of the Heart.—The adjourned discussion on Dr. E. S. Norris's paper on 1000 Cases of Vaccination and

Revaccination was resumed by Dr. W. A. Ellison who said that it was necessary for the medical profession to prove to the public that vaccination if properly performed was never productive of harm. When bad results were attributed to vaccination a careful examination of all the evidence was necessary and it would appear that frequently, as in a case instanced by him, the *modus operandi* was at fault. Dr. Ellison inquired whether members were agreed upon the best method of vaccinating. He wished also to have the opinion of others as to the employment of shields and other artificial means of protecting the sore.—Dr. Norris, in reply, briefly re-stated the conclusions that he had arrived at, the main points being (1) the high protective influence of revaccination which afforded an even higher protection than small-pox itself; and (2) the fact that primary vaccination did not protect against the malignant form of small-pox.—Dr. F. H. Hawkins (Reading) read a paper entitled "The Treatment of Acute Lobar Pneumonia." After a few remarks upon the nature of the disease the various points to be attended to in treatment were discussed in detail. Rest in the recumbent position was first insisted on and stress was laid on the importance of keeping up the patient's strength by feeding. Care should be taken to avoid distending the stomach by too much food, as by such means the heart's action might become seriously embarrassed. Free drinking of cold water was advised both for its action as a depurating agent and as a stimulant. Attention to the alimentary system was considered, a few grains of calomel in the early stage of the disease being useful. Vomiting should be met by a mustard poultice to the epigastrium and flatulence often yielded to bicarbonate of soda, hydrocyanic acid, and calumba. The strength of the patient could also be kept up by the administration of diffusible stimulants of the ammonia group. With regard to local treatment, the use of linseed poultices was highly recommended and in cases where the temperature was high the local application of ice was advised. For the acute pain when caused by engorgement of the lungs the local application of ice was indicated but when pleurisy and engorgement occurred together a few leeches would give quick relief. In this connexion the use of morphia was alluded to, great caution in its administration being advised. The use of strychnine as a respiratory stimulant was highly spoken of, particularly when a large area of lung was involved. In these cases the administration of oxygen was also recommended. The temperature should not be specifically treated, but when associated with other grave signs it could be best met by the use of the ice cradle or of ice-packing. Dr. Hawkins expressed his opinion that consolidation of the lung did not always produce dilatation of the right heart, and cases were cited in support of this statement. He thought that many cases of failure of the heart were due to fibroid degeneration, the cause being the toxin acting upon that organ. Here the use of strychnine was warmly commended, its use being specially indicated at or about the crisis. Digitalis, too, in certain cases was useful. The question of sleep was next discussed at length, Dr. Hawkins's experience being that in many cases a deep sleep was bad and that it was well to rouse partially the patient occasionally to administer food. When sleeplessness was persistent bromide of potassium was indicated. Restlessness was best met by the wet pack and chloral hydrate in from 15- to 20-grain doses was highly spoken of. He seldom or never used opium. For delirium bromide of potassium was useful, as was camphor for low muttering delirium. When delirium was due to exhaustion alcohol was indicated. Lastly, the use of alcohol in pneumonia was discussed at length and the paper concluded with a *résumé* of the indications for administering or withholding this drug.—Dr. Norris, Mr. Arnold Thomson, Dr. C. R. Elgood, Mr. W. H. Beresford, Dr. G. E. Hale, and the President having offered remarks Dr. Hawkins replied briefly.

ROYAL ACADEMY OF MEDICINE IN IRELAND.—A meeting of the Section of Obstetrics was held on March 14th, Dr. Andrew J. Horne being in the chair.—The Secretary exhibited for Dr. J. H. R. Glenn a Uterus removed by Retro-peritoneal Hysterectomy, showing peculiar venous attachments.—Dr. Alfred J. Smith exhibited Three Fibromatous Uteri showing mucoid degeneration.—Dr. R. D. Purefoy exhibited a Fibroid Uterus and a specimen of Ruptured Tubal Pregnancy.—Dr. Horne exhibited a specimen of a large Uterine Polypus.—Dr. Purefoy read his report of the Rotunda Hospital, Dublin, for the year 1900-1901. During the year 1905 women were admitted to the maternity department of the Rotunda Hospital, of whom 1610 were confined and the others were discharged not being in labour. Among those treated were found some of the rarest concomitants of pregnancy—viz., emphysema, puerperal aphasia, and pulmonary embolism. During the year three deaths occurred: (1) that of a patient who was moribund on admission; (2) that of an emaciated cachectic patient who was some days in labour before admission and who succumbed after Cæsarean section which was rendered necessary by uterine fibroids; and (3) that of an elderly patient with contracted pelvis in whom death occurred after induction of premature labour, this being unusually protracted by inertia of the uterus and morbid adhesion of the placenta. The dispensary attendances during the year were 10,741. In the extern maternity department 2175 cases were treated, including 286 cases of abortion, 18 cases of accidental hæmorrhage, six cases of placenta prævia, 27 cases of post-partum hæmorrhage, and seven cases of prolapse of the funis. In the intern maternity department 1616 patents were treated, of whom 549 were primiparæ. The operations performed included 66 forceps cases, 24 cases of manual removal of the placenta, 10 cases of version, and one case of Cæsarean section. There were 19 cases of accidental hæmorrhage, nine cases of placenta prævia, 36 cases of post-partum hæmorrhage, and one case of secondary hæmorrhage. The presentations included 43 cases of breech, five of face, eight of footling, 20 of occipito-posterior, six of transverse, and 10 cases of prolapse of the funis. Of multiple pregnancy there were 14 cases, all of which were twins. Episiotomy was practised in 18 cases, chiefly as an aid to forceps extraction—the single incision in the mesial line was invariably adopted. Ophthalmia occurred in four cases during the year. In all instances the attack was mild and had entirely subsided before the infant left the hospital. A red vaginal discharge, having the characters of menstrual fluid, was observed in two infants, beginning on the second day after birth and lasting for four or five days. The causes of morbidity included mastitis in four cases, influenza in two cases, bronchitis in three cases, phthisis in one case, pleurisy in one case, mania in one case, syphilis in two cases, erythema in two cases, inflamed piles in one case, and rheumatism in one case. In 12 cases the cause of morbidity was not ascertained. The report dealt very fully with the case of that rare and interesting condition, puerperal aphasia, of which Dr. Purefoy's case was an example. The patient, aged 23 years, was a primipara of healthy appearance. Her pregnancy had proceeded most favourably till the beginning of the ninth month, at which time her husband, one day returning from work, found her in bed and unable to speak anything but the word "Yes." At the same time he observed large quantities of vomited material on the floor. The case of pulmonary embolism occurred in a primipara, aged 34 years, who made a good recovery. Johnson and Sinclair had recorded seven cases of this affection, but this was its first occurrence during Dr. Purefoy's term of mastership.—At the termination of the reading of the report it was decided to postpone the discussion until the next meeting of the Obstetrical Section and the meeting terminated.

MANCHESTER MEDICAL SOCIETY.—A clinical meeting of this society was held on March 19th, Dr. Thomas Harris, the President, being in the chair.—Mr. Joseph Collier showed the following surgical cases: (1) a man on whom Excision of the Left Knee-joint had been performed for Rheumatoid Arthritis; (2) a boy after Excision of the Upper Half of the Fibula for Central Sarcoma; (3) a woman in whom the Dilated Vermiform Appendix had been adherent to, and communicated with, the Bladder, so that fæces passed per urethram; laparotomy had been performed and the appendix removed, the patient making a complete recovery; and (4) a girl on whom Erasion of the Knee-joint had been performed; the patella had been kept freely moveable and the extensors had consequently retained full control over the joint.—Dr. Joshua J. Cox showed a boy, aged seven years, and his sister, aged nine years, who were both suffering from Infantile Myxœdema and were recovering rapidly under thyroid treatment. When the children came under observation at the Clinical Hospital, Manchester, five months ago they were exceedingly dwarfed, lacked intelligence, could not dress themselves, did not play like other children, and had the facial and other signs of infantile myxœdema. Their parents were healthy and well-grown and had five other children, all of whom were normal; no tuberculous

or neurotic family history could be obtained. The mother stated that all her pregnancies and labours had been natural and that she had no fright while carrying the two children now suffering from infantile myxœdema who were intelligent and of average height and weight until four years of age, after which period they developed neither mentally nor physically. Each child was now six inches shorter and 14 pounds lighter than the normal child at a corresponding age. The progress made under thyroid treatment was remarkable. The children were growing, were increasing in weight, were rapidly becoming more intelligent, and could dress themselves. That week they had been admitted to the School for Defective Children recently established by the Manchester School Board. Dr. Cox remarked that it was unusual to find sporadic cretinism in males and still more uncommon to find two cases occurring in one family.—Dr. J. Gray Clegg showed a series of Ophthalmic Cases, including optic neuritis, optic atrophy, thrombosis of the central artery of the retina, tuberculous kerato-iritis, and central choroidal opacity of the lens. —Mr. J. Howson Ray showed the following cases: (1) a man who had previously been submitted to Laparotomy for Gangrenous Appendicitis with general septic peritonitis; the appendix, which was removed, was shown; it contained two concretions; (2) a girl with Excision of the Elbow for Tuberculous Arthritis, where the disease had already divided each of the three bones completely at the usual saw-line, so that the operation needed only scalpel, forceps, and spoon; (3) a case of Recurrent Molluscum Fibrosum of the Face, Scalp, and Orbit, with arterial angeioma in the diploë and lymphatic obstruction; and (4) a child, aged seven months, successfully treated six weeks previously by laparotomy for acute ileo-cæcal intussusception of four days' duration.—Mr. C. Roberts showed the following surgical cases: (1) a case of Traumatic Aneurysm of the Dorsalis Pedis Artery, the treatment proposed being to excise the sac; (2) a case of Psoas Abscess pointing in the groin and simulating a femoral hernia; (3) a case of Tumour of the Abdominal Wall, probably of a malignant nature, arising beneath the scar of an operation for the radical cure of a left scrotal hernia; and (4) a case of Epithelioma of the Tongue, illustrating the difficulty of early diagnosis from syphilitic disease of that organ and the misleading initial improvement after administration of potassium iodide.

FORFARSHIRE MEDICAL ASSOCIATION.—A meeting of this society was held on March 6th, Professor D. MacEwan, the President, being in the chair.—Professor J. A. C. Kynoch showed (1) a specimen of Fibroma Uteri removed by pan-hysterectomy for repeated hæmorrhages and retention of urine, and (2) a Fibroid Polypus of the Uterus removed post mortem in which there had been no hæmorrhage.—Dr. R. C. Buist read a paper on Albuminuria in Pregnancy. The paper emphasised the value of routine examination of the urine for albumin in all pregnant women and of a milk diet when albuminuria in pregnancy had been discovered. Personal experience of routine examination showed about 2 per cent. of his confinement cases with albuminuria. When the examination showed albumin it was usually possible to avoid eclampsia by giving the patient milk only. Six pints a day was the amount that should be aimed at and suggestions were made for cases where simple milk was not well taken. Notes were given of cases to illustrate various points. Professor Kynoch, Dr. J. Mackie Whyte, Dr. G. Halley, and Dr. A. J. Duncan spoke on the paper, and Dr. Buist replied.—Professor C. R. Marshall read a paper on the action of a new purgative termed "purgatin." This, he explained, was the first synthetic purgative built up on the type of the active principles of aloes, cascara sagrada, rhubarb, and senna which had been put upon the market. It was the outcome of the researches of Tchirch who had shown that the "ecoproticophor" group in the drugs was probably anthraquinone or methyl-anthraquinone. Vieth, experimenting on cats, had found that of anthraquinone derivatives, anthrapurpurin and flavo-purpurin were the most suitable purgatives, but as they were somewhat uncertain in action and tended to induce colic he had sought for, and had found, what had now been put on the market under the name "purgatin." This substance had been investigated therapeutically by Ewald, Stadelmann, and Ebstein who agreed in the main in ascribing to it a gentle but certain action in appropriate doses. It was best employed in simple or "functional" constipation, and the dose recommended was from seven and a half to 15 grains, but 30 grains were often required. The main objection to its use was the reddish colouration of the urine which it induced. Professor Marshall gave an account of his own observations made on himself and said that he agreed in the main with the above-mentioned clinicians. He thought that it would be of use as a simple purgative but stated that the large dose necessary in most cases and the absorption which occurred were distinct objections. Upon the latter he dilated at some length, and also mentioned that in large doses distinct renal irritation was induced—a symptom not hitherto described.—Some questions were asked regarding reactionary constipation and weakness after its use, to which Professor Marshall replied.

NOTTINGHAM MEDICO-CHIRURGICAL SOCIETY.—A meeting of this society was held on March 19th, Mr. E. C. Kingdon, the President, being in the chair.—Dr. C. Bell Taylor showed two cases of Recent Cataract Extraction.—Mr. W. M. Willis showed the following cases: 1. A boy after Arthrectomy for Tuberculous Disease of the Knee-joint. The patella had been sawn across and all the synovial membranes and semilunar cartilages had been removed. No drain was used. The patella was wired and the skin was sewn up. The wound healed well, leaving the boy with a sound limb, and his general condition had greatly improved since the operation. 2. A woman after operation for Perforated Gastric Ulcer. There was a history of sickness of two years' duration but there had never been hæmatemesis. 3. A case of Congenital Dislocation of both Hip-joints. (A skiagram was shown.)—Dr. Bell Taylor read a paper on the Art of Extracting for Cataract and exhibited a patient on whose right eye he had operated for cataract in his eighty-sixth year and on whose left eye he had operated for cataract in his ninety-sixth year. The pupils were central, round, and moveable. The patient could read for hours. Another patient, aged 60 years, who was operated upon for cataract in both eyes four years ago was also introduced upon recovery from the operation. He had been employed in the furnace department of one of the principal railways. The glare and heat to which he was exposed in striking red-hot metal for hours daily without glasses were necessarily very trying. Both eyes were, however, perfect; the pupils were central and moveable and the sight was excellent, while there was not the slightest trace of operative interference. Dr. Bell Taylor contended that the secret of success lay in the use of a very narrow knife and in the formation of a very wide wound and that, after extraction, a perfect and moveable pupil (as in aphakial animals) largely compensated for the absence of the lens.—The paper was discussed by the President, Dr. F. R. Mutch, Dr. W. G. Laws, Mr. R. G. Hogarth, and Mr. F. J. Lander, and Dr. Bell Taylor replied.—Mr. W. E. M. Wright read notes of a case of Malignant Stricture of the Œsophagus occurring in a man, aged 54 years, and showed a specimen of the larynx in which there was a large perforation posteriorly from malignant ulceration extending from the œsophagus.

MIDLAND MEDICAL SOCIETY.—The ninth meeting of the session of this society was held at the Birmingham Medical Institute on March 19th, Mr. A. Oakes, the President, being in the chair. The following officers were nominated for election:—President: Mr. Langley Browne. Treasurer: Mr. J. Garner. Secretaries: Mr. Christopher Martin and Dr. J. D. Stanley.—Mr. Jameson Evans showed a woman, aged 59 years, who had been under his care since the end of January, 1902. She was suffering from a typical diffuse Keratitis over the Lower Half of the Right Cornea. At one part it was infiltrated with fine vessels forming a distinct "salmon-patch." She was making satisfactory progress towards recovery under treatment with mercury, potassium iodide, and atropin drops. Her family history was interesting. She had had six children and two miscarriages. Two of the children had suffered from eye troubles; one of these, a girl, aged 22 years, was shown at the meeting. She showed corneal nebulæ the result of interstitial keratitis for which she had been under treatment at the Eye Hospital eight years ago. She had marked Hutchinson's teeth and was deaf.—Dr. W. J. McCardie showed Mr. R. W. Lloyd's Paper Bag for Clover's Inhaler. The bag was described in THE LANCET of Jan. 11th, 1902, p. 99.—Mr. L. P. Gamgee showed a Kidney the pelvis of which was completely filled by a villous papilloma. The patient was a man, aged 50 years, who had suffered from

attacks of profuse hæmaturia for eight years. The kidney was removed by the lumbar route and the patient made a good recovery.—Mr. F. V. Milward read a paper on Localised Intra-peritoneal Suppuration and its Treatment by Drainage which was illustrated by a series of wax casts of the various intra-peritoneal spaces.—Dr. McCardie read a paper on a case of Faintness and another of Vomiting after Operation under Ethyl Chloride Narcosis.

GLASGOW SOUTHERN MEDICAL SOCIETY. — A meeting of this society was held on March 20th, Dr. John Stewart, the President, being in the chair.—Professor McCall Anderson opened a discussion on the Curability of Phthisis Pulmonalis. He spoke approvingly of the use of tuberculin and said that he had long been an advocate of the open-air treatment. He believed in the efficacy of a residence in a high mountain valley where pure air could be breathed. Sanatoriums for the treatment of phthisis ought to be built on sites readily accessible, on dry and porous soil, and in an atmosphere as pure as possible. He thought that the results of the treatment of pulmonary consumption in sanatoriums were most encouraging.—Dr. George Middleton remarked that no doubt many cases of phthisis after treatment in sanatoriums gained flesh and weight, but the physical signs often remained the same. No matter how early in the course of the disease he was enabled to treat pulmonary phthisis he was always apprehensive as to the result. In treatment he advocated fresh air, cod-liver oil, and good food, and he could recall to mind many cases of phthisis that recovered by this means of treatment. He was of opinion that the injection of tuberculin was not without risk.—Dr. James Hamilton remarked that he had seen many cases of phthisis pulmonalis in which recovery had undoubtedly taken place.—Dr. Charles E. Robertson said that he did not think that a cure was a common result of treatment, although improvement in the patient's condition was occasionally seen. He welcomed sanatoriums, not because of the curative effects of the treatment therein, but because they were a means of preventing the spread of pulmonary phthisis.—Mr. L. Burges said that he had seen cases in which the tubercle bacilli were found and in which a cure resulted under treatment.

BIRKENHEAD MEDICAL SOCIETY.—A meeting of this society was held on March 14th, Dr. J. Pinkerton, the President, being in the chair.—The minutes of the previous meeting were read and confirmed.—Dr. White showed a specimen of Advanced Atheromatous Disease of the Aorta and gave notes of the case.—Dr. Edgar Stevenson read a paper on Tinnitus Aurium and Chronic Deafness and gave a demonstration of a New Method of Treatment.—Mr. H. L. Pearson, Dr. Wilkinson, Dr. Harrington, and Dr. Lambert joined in the discussion which followed and Dr. Stevenson briefly replied.

Reviews and Notices of Books.

Études Anatomiques sur les Grossesses Tubaires. Par le Dr. A. COUVELAIRE, Ancien Interne des Hôpitaux, Chef de Clinique Obstétricale à la Faculté de Médecine de Paris. Paris: G. Steinheil. 1901. Royal 8vo, pp. 160, 21 Plates. Price 12 francs.

THESE researches of Dr. Couvelaire are of great importance. As he justly remarks, the true anatomy of tubal gestation can only be studied by the examination of early specimens in which no secondary changes have occurred. He has been able to investigate 14 such cases. In seven of these the ovum was attached in the isthmus and in seven in the ampulla of the tube.

This monograph includes a study of the topographical anatomy of the gravid tube beyond the tubal sac; of the anatomy of the ovum in the tubal sac; of the attachment of the ovum to the tubal wall; of the free pole of the ovum—viz., the area corresponding to the reflexa; and some researches upon the anatomy of tubal rupture. The cases are recorded in full and there are several very good photo-engravings.

The author finds no evidence of the presence of any preceding salpingitis in his specimens and does not think that disease of the tube plays any important part in the etiology of tubal gestation. The changes in the wall of the tube, he considers, are produced by the presence of the ovum and do not, as has been maintained by other writers, precede it. He has been unable to find any changes in the opposite tube analogous to those described by Webster and others and he concludes if such changes do occur that they must be a matter of some rarity. In all his cases the intensity of the changes in the tubal wall are directly proportional to its nearness to the site of the ovum and affect all the tissues of the tube. In his study of the anatomical changes at the site of the attachment of the ovum he has not been able to find anything corresponding to the spongy layer of the decidua as described by Webster. The intervillous spaces are separated from the wall of the sac by an irregular layer of cellular elements termed the external capsule of the ovum and which Dr. Couvelaire thinks is entirely of fœtal origin. Between this external capsule and the wall of the tube itself there is no very clear limit. In the immediate neighbourhood of the ovum there is marked infiltration of the wall of the tube with leucocytes. Examination of the free pole of the ovum shows that it is covered by a membrane composed mainly of fibrin and large cells like those found in the external capsule. This covering, which also appears to be formed entirely from fœtal tissues, can only be termed a decidua reflexa from its topographical anatomy, as it does not appear to fulfil any of the functions of that layer of the decidua. Attached to the external surface of this pole of the ovum, and in the later stages of development considerably atrophied and compressed, are some of the fringes of the mucous membrane of the tube.

In a study of the anatomical changes associated with rupture of the sac Dr. Couvelaire points out the important part played by the invasion of the wall of the tube by the fœtal villi, the resulting rupture of the vessels, and the occurrence of interstitial hæmorrhages with consequent thinning of the wall at the seat of ultimate rupture. The book is a valuable contribution to the study of tubal pregnancy and gives a clear account of some very careful and good work.

Das Wachstum und die Verbreitungswege des Magencarcinoms. (The Growth and Mode of Extension of Carcinoma of the Stomach.) By Dr. ROBERT BORRMANN. Jena: Gustav Fischer. 1901. 8vo, pp. 400, 16 plates and 21 figures. Price 16 marks.

THIS important monograph by Dr. Borrmann is based on work done by him in Professor Ribbert's pathological institute, the material being supplied by Professor Mikulicz. No fewer than 63 specimens of excised carcinoma of the stomach were carefully and thoroughly examined. The work was chiefly undertaken with a double object in view—namely, to prove whether the new growth really increases and multiplies out of its own proper elements, or whether the neighbouring tissues undergo transformation into tumour tissue and so add to the tumour. It may be stated at once that Dr. Borrmann's researches lead him to the conclusion that there is only one mode of growth in gastric carcinoma and that is by the increase of its own elements without the neighbouring tissues taking any part in it.

The subject matter of this book is arranged under (1) a special part in which full details of the cases are given and (2) a general part which is again divided into pathological and clinical sections. Two tables are appended giving the clinical and other details of the cases and finally the illustrations in the plates are explained.

As regards the extension and spread of carcinoma of the stomach the author says that it is generally well known that the carcinoma spreads through the layers of the stomach (with the exception of the mucosa) by the lymphatic spaces and vessels. Nobody, however, seems to have thought that the carcinoma cells may multiply in the lymph channels of

the mucous membrane, although Cuneo has demonstrated the presence of lymphatics in this layer. Carcinoma selects by preference the lymph channels of the submucosa for its extension and it spreads by continuous growth and not by a metastatic process except in the rarest cases. This continuous growth is prolonged to the serous coat and so into the glands. Dr. Borrmann shows that in 20 out of his 63 cases of carcinoma of the stomach there was extension to the duodenum. He concludes that the pylorus offers no insuperable barrier, as has been supposed, to the extension of the growth, although this spread to the duodenum undoubtedly first occurs in the later stages of the disease. This conclusion is based largely on microscopical evidence. In discussing the morphology of gastric carcinoma the author thus classifies these growths: (1) carcinoma solidum; (2) cylindrical-celled carcinoma; (3) colloid carcinoma; (4) diffuse polymorphous-celled carcinoma; (5) malignant adenoma; and (6) mixed forms. He explains the structure of the malignant adenoma by the formation of a lumen inside the column of cells, the cells clinging to the walls of the lymphatic vessels. He does not recognise the so-called scirrhus as a group but he adds this term when it may be required. The malignancy of tumours is not always dependent upon their morphology. Dr. Borrmann recognises in general the relative innocence of the true cylindrical carcinoma and the malignancy of the diffuse colloid carcinoma. In carcinoma involving the mucous membrane the morphology does not justify the view that the growth has developed from any definite kind of cell of the glands in question. The author further adds that in the 2000 sections which he has examined he has never seen anything incompatible with the view that the cells grow into the lymphatic channels of the mucous membrane without the glandular elements being involved. The growth of the malignant adenoma takes place between the glands.

Throughout his book Dr. Borrmann lays great stress on the spread of carcinoma of the stomach by the lymphatics to the exclusion of extension by the veins, yet this more limited view is not by any means universally accepted. Thus M. Brault in the recent issue of Cornil and Ranvier's Pathology shows at some length that carcinoma spreads not only by the lymphatics but also by the venous channels.

The clinical section of the work is of great importance. In more than one-half of the cases (58 per cent.) both curvatures were involved in the malignant disease and generally to an equal extent, whereas in 30 per cent. the greater curvature and in 11 per cent. the lesser curvature were alone affected. Mikulicz has divided carcinoma more from the clinical standpoint into (1) carcinoma of the pylorus which nearly always encircles the organ; (2) carcinoma of the body which may occur in the greater or lesser curvature, but it may be circular when it extends to the pylorus; (3) carcinoma of the cardiac portion which is always situated on the lesser curvature; and (4) fundus carcinoma which is very rare.

Dr. Borrmann says that in 43 out of the 63 cases the tissues cut through in excising the growth were free from disease, as ascertained by the microscope, but that in 20 the incision had passed through diseased structures (cancerous). In nine of these 20 cases the diseased tissues were in the duodenum. The author concludes that in extensive carcinoma diffusely spreading and where the possibility of extension to the duodenum is present from three to four centimetres of the duodenum should be resected and in all other cases from one to one and a half centimetres should be taken away. It is quite impossible to see with the naked eye the fine outgoing processes from the new growth, hence wide resection is necessary. On the other hand, the author believes that total extirpation of the stomach is rarely called for. The glands and fatty tissue must be taken away. One possible source of error is admitted by the author in his investigation—viz., that the whole of the parts removed may not have been received by him, but after consultation with Professor Mikulicz he thinks that this could only very rarely have happened.

Rather meagre space is given to the question of recurrence and the author is somewhat dogmatic here. If the growth has been completely and radically removed then recurrence is, in the author's opinion, simply excluded. Presumably recurrence locally or in the glands only is referred to here. Of the 43 cases in which microscopically the cut ends of the resected stomach were found to be free from disease 28 patients are still alive and free from recurrence. Of the remaining 15, 11 died from the effects of the operation and four from recurrence in the glands. In view of these results Dr. Borrmann advocates the thorough removal of carcinoma of the stomach even in advanced cases.

Some comment is made upon the all-important subject of early diagnosis, but there are clearly limits to the possibility of early recognition of the disease, as in the case where the patient does not come under observation until the disease is considerably advanced owing to the symptoms having hitherto been trifling; also undue importance should not be attached to chemical tests, especially if they are not frequently repeated. It is difficult to do justice to the many points which Dr. Borrmann raises in this admirable monograph. The book is worthy of careful study, if only for the amount of excellent work which has been put into it.

LIBRARY TABLE.

First Annual Report of the Director of the Pasteur Institute of India, Kasauli. Lahore: Punjab Government Press. 1902. Pp. 32.—Hydrophobia is, as is well known, a scourge in India. Of wild animals the jackal and the wolf are very liable to be attacked and among the semi-wild pariah dogs the disease is also prevalent. The director of the Indian Pasteur Institute is Major D. Semple, R.A.M.C., and the institute over which he presides is the first one of the kind in the British Empire. It was opened at Kasauli on August 9th, 1900. Up to August 9th, 1901, there have been treated 321 persons for bites by rabid animals. Of these 29 were bitten on the head and face and one died; 228 were bitten on the naked skin in other parts of the body and two died; and 64 were bitten through the clothing and none died. Besides these deaths there were four of persons all bitten on a naked part of the body and all of whom died during treatment. They were all bitten by wolves on Dec. 29th, 1900, but did not arrive for treatment until Jan. 17th, 1901. There were also three patients, all bitten on exposed portions of the body, who died within 15 days from the last inoculation. These three and the preceding four patients are not reckoned as failures because their nerve centres became invaded by the virus of the original bites before treatment was completed. The report gives a very complete account of the method of preparing the virus. Nine other persons bitten by the same animals whose bites caused the seven deaths not reckoned as failures were treated at the same time and remain well; while four persons bitten by the same animals whose bites caused the deaths of the three failures were treated and also remain well.

London Matriculation Directory, January, 1902. Cambridge: Burlington House. 1901. Pp. 120. Price 1s. 6d.—This directory is issued under the auspices of the University Correspondence College and contains the calendar of that institution. The directory contains the matriculation regulations of the University of London, a list of text-books for, and the papers set in, the examination of January, 1902. Solutions to the papers are also given, so that the private student can test the accuracy of his work.

The School Calendar, 1902. London: Whittaker and Co.

Pp. 216. Price 1s.—The purport of this book is explained by the sub-title which is as follows: "A Year-book of Scholarships and Examinations at Schools, Colleges, and Universities for the Year 1902." The scholarships and prizes of the various county councils and of the London School Board are also included. The publication will be found useful by parents and guardians in deciding for what aids to education in the form of scholarships or prizes those for whom they are responsible shall apply.

Transactions of the American Ophthalmological Society, Thirty-seventh Annual Meeting, New London, Connecticut, 1901. Hartford: Published by the Society. 8vo, pp. 405 Press of the Case, Lockwood, and Brainard Company.—The present number of these Transactions contains much interesting material for study and the cases reported are in many instances illustrated by excellent drawings, chromo-lithographs, and photographs. As there are 30 articles besides a report of a committee on standards and methods for examination in respect to acuteness of vision, colour sense, and hearing, of which Dr. C. H. Williams was chairman, it is impossible to mention any but those that seem to possess special interest. There is a valuable report at the commencement of the volume giving supplementary histories of numerous cases that have been recorded in the Transactions of the American Ophthalmological Society prior to 1900. Dr. Wilbur B. Marple of New York City contributes an article on the Pathology of Vascular Growths into the Vitreous, illustrated with several plates showing the conditions in an interesting case under the author's care. In this case the retina was detached and the appearances were so threatening that enucleation was advised and practised. Dr. Marple has collected the history of several other cases. A case of Melanotic Giant Cell Sarcoma of the Limbus Cornea associated with an Implanted Secondary Growth in the Lower Eyelid is described and illustrated by Oliver F. Wadsworth, M.D., of Boston, Mass., and Frederick H. Verhoeff, M.D., also of Boston, Mass. A histological description of an Eyeball with Dropsical Degeneration of the Rods and Cones of the Retina Simulating Glioma is given, with illustrations by G. E. de Schweinitz, M.D., and E. A. Schumway, M.D., both of Philadelphia, Penn. Another article, by Dr. G. E. de Schweinitz, is on the Treatment of the Apparently Unaffected, or at most but slightly Implicated, Eye in cases of Monolateral Glaucoma. Dr. de Schweinitz recommends the employment of a myotic and then iridectomy. Charles S. Bull, M.D., of New York, describes a series of Six Cases of Metastatic Choroiditis occurring in the course of Pneumonia due to Grippe; in two of the cases necropsies were performed. Several interesting cases of the Entrance of Foreign Bodies into the Eye are recorded by S. B. St. John, M.B., of Hartford, Conn., who gives an excellent photograph showing the position of the piece of steel; by Alvin A. Hubbell, M.D., of Buffalo, N.Y., in whose case the foreign body remained for nearly 18 years, setting up several attacks of sympathetic irritation which were successively subdued; it was ultimately removed without complete loss of vision in the injured eye and with perfect recovery of vision in the sympathising eye; and by William M. Sweet, M.D., of Philadelphia, Penn., who particularly dwells on the diagnosis of foreign bodies in the eye. A variety of new instruments are described by Carl Koller, M.D., of New York City, who has devised a Corneal Loupe; by Charles H. Williams, M.D., Boston, Mass., who gives a drawing of an Incandescent Lamp for Ophthalmoscopic Examination; by William Thomson, M.D., and Archibald G. Thomson, M.D., of Philadelphia, Penn., who have invented an Improved Means for detecting Colour-blindness; and by Samuel Theobald, M.D., of Baltimore, Ind., who suggests a New Instrument for Preventing Incarceration of the Iris in Iridectomy Operations.

JOURNALS AND MAGAZINES.

Revue d'Hygiène et de Police Sanitaire. Vol. XXIV., No. 2. February, 1902. Paris: Masson et Cie.—This number contains the text of the new French law for the protection of the public health which was adopted by the Senate on Feb. 4th and which will come into operation one year after its promulgation. In the next number we are promised a discussion of the measure. Dr. Vaillard completes his series of articles on Preserved Meats, the accidents which they provoke, their cause, and the means of preventing them. Among the necessary precautions the author insists upon the inspection of animals whose flesh is intended for use as preserved meats, cleanliness during the process of preparation, and the rigorous sterilisation of the meat. Dr. le Roy des Barres gives an interesting account of Five Epidemics of Diphtheria at Saint Denis, the first of which is supposed to have occurred as far back as 1827, and the last took place in 1901. In this latter outbreak the excellent effects of antitoxin were very apparent. Among other papers is an exhaustive one by Dr. Ch. Doptes on Disinfection by Spraying with a Solution of Formol, and a contribution from Mr. M. H. Emery on a Method of Differentiating the Enteric Fever Bacillus from the Bacillus Coli.

Public Health. No. 6, vol. XIV. London: Rebman, Limited.—One of the editorial articles in this number discusses the somewhat difficult question of the relationship of the public vaccinator and the medical officer of health to the general practitioner. The editor thinks that every general practitioner should be the recipient of Government lymph and that he should also act as a local public vaccinator. The other editorial article deplores the unfortunate *impasse* which has taken place at Glasgow, and surely it might be added in certain large towns in England, in consequence of the sanitary inspector occupying a position which enables him to act independently of the medical officer of health. Other articles comprise papers on Plague and its Prevention, by Dr. D. S. Davies, Dr. E. W. Hope, and others, and an interesting study by Dr. W. H. Symons on the Distribution of Phthisis.

The Cornhill Magazine—The number for April is full of good things. The paper which appeals most to us in our capacity of medical journalists is the "Londoner's Log-book," wherein the "Londoner" gracefully banters the self-styled Christian Scientists. We quote the passage: "Great was my consternation when the other day I found added to the collection a pamphlet entitled 'The Wonders of Thought-Force.' The title startled me. Since she was vaccinated Selina has lost all fear of small-pox, declares that she was a goose for giving way to Dr. Snuffin's nonsense, and affirms her belief that, if people would only set to work in the right way, they could be perfectly healthy without any doctors' abominations. True it is that Grape-nuts have proved a failure and the Salisbury Treatment has palled; but I am not free from apprehension that she is turning her mind in directions even less compatible with orthodoxy. This I trace to the influence of young Lady Farringford (*née* Sally Van Oof), who, I feel certain, has given her the pamphlet on 'Thought-Force,' setting forth the miraculous cures of physical and mental ailments effected by Helen Wilmans Post, Sea Breeze, Florida, U.S.A. From that pamphlet I cull two or three quotations—'racy,' as Pennialinus would say of the Great Republic—and of that 'high faith' which Mr. Lowell commended. 'John M. White, North Wales, Pa., S.S.—Mrs. Wilmans Post,—I most cheerfully give you my testimonial of the great good you have done me by your absent treatment. Five years ago I was a physical wreck beyond the reach of the best medical doctors, as five years of experience proved. I went to the best doctors to be found here and in Philadelphia, and as a last resort I went

before a clinic of doctors and the late Professor Pepper, at the University of Pennsylvania, and they all pronounced my case incurable, as they said the stomach *was gone*; therefore nothing to build on; then I gave up in despair until I found one of your circulars, and, like a drowning man, grasped it, and I bless the event ever since, for you built me up beyond my hopes—yes, saved my life. To-day my stomach can digest almost any kind of food and I am in high hope of being a stronger man than ever I was. As you know, my case was a desperate one and I had lost all interest in life.' 'Mrs. B. C. Copeland, Evansville, Ind., S.S.—I can truly say that I have been successfully treated and *cured* by you of diseases that the old-school doctors have failed to cure and even went so far as to say I could *not* be cured. I am now almost 72 years of age and am feeling well and can stand more work than the generality of younger people and people who do not know me take me to be about 50 years of age. And in truth I must give the power of your mind the honour and credit of all my good health and youthful appearance. 10 years ago I was a perfect wreck—could not walk any distance without stopping for breath and strength. I now can walk miles with comparative ease.' On the attractions of this system it were superfluous to enlarge. To have one's stomach restored to one after it was 'gone'; to be able to digest 'almost any kind of food'; never to need another dose of medicine; and to look 50 when one is really 72, these are boons not lightly to be esteemed. But what most attracted the pensive taxpayer over whom an impending War-Budget begins to cast its shadow is Helen Wilmans Post's treatise on 'The Conquest of Poverty.' Of this its gifted authoress boasts, and probably with justice, that it is 'the most popular book in the range of mental science literature. It brings freedom to the mind, and through the mind to the body.' With a steadily decreasing income and an expenditure pitched high enough to satisfy the social demands of Stuccovia, that is, indeed, a freedom devoutly to be wished but not, I fear, to be attained."—"In Praise of Birds," by E. V. B., is written with all the charm of language which we expect from the translator of the "Story Without an End."

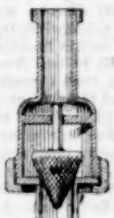
The Practitioner.—The March number contains a paper entitled "The Health of the People" by Mr. James Cantlie, in which he touches upon many points that concern the physical well-being of the community. He asks the question, "Why is town life so detrimental?" and considers that there are several reasons why such a state of affairs should exist. The absence of fresh air in our cities is, of course, a potent factor and the disinclination to take exercise is a further detriment to good health. Mr. Cantlie points out that the great health problems which immediately present themselves resolve themselves into two—namely, "How are we to maintain the health of our town-dwellers and the numbers of our country districts?" The former he considers to be impossible without, so far at any rate as the youths of the poorer classes are concerned, military conscription, and the latter requires improved conditions of living for those who till the soil. Dr. Arthur P. Luff contributes an interesting paper on Gout, Observations on its Pathology, Forms, and Treatment, and Dr. J. A. Gibson gives some good illustrations of Graves's Disease. Dr. F. W. Burton-Fanning's paper on the Etiology of Pulmonary Tuberculosis is also worthy of note seeing that it contains some original observations on the exciting causes of tuberculosis which have hitherto not been sufficiently recognised. For instance, he shows that physical over-exertion is a most powerful determining cause of the system's limiting or protective agencies against the disease.

The Quarterly Journal of Microscopical Science. Edited by E. RAY LANKESTER, F.R.S., ADAM SEDGWICK, F.R.S., F. R. WELDON, F.R.S., and SYDNEY J. HICKSON, F.R.S. With Lithographic Plates and Engravings on Wood. London: J. and A. Churchill. New Series. No. 180. Vol. XLV. Part 4. 8vo. Pp. 60. Price 10*s.*—The following articles are contained in this number: 1. On the Structure of the Excretory Organs of Amphioxus, Part 1, by Edwin S. Goodrich, M.A., Fellow of Merton College, Oxford, with a plate. Mr. Goodrich describes the excretory tubules as forming a series which open into the atrium but not into the cœlom. They are provided at their blind internal ends with a large number of solenocytes. He concludes from his observations that in their segmental arrangement, in their function, and in their histological structure the excretory organs of amphioxus and the nephridia of phyllodoce are in all essentials identical. 2. A contribution to the Morphology of the Teleostean Head Skeleton, based upon a study of the developing skull of the three-spined Stickleback (gasterosteus aculeatus) with four plates and five text illustrations; by H. H. Swinnerton, B.Sc. This is a very elaborate and carefully worked out description of the development of the skull of this little fish. 3. The development of Admetus Pumilio (Koch), a contribution to the Embryology of the Pedipalps; by L. H. Gough, with two plates. 4. On the Teeth of Petromyzon and Myxine; by Ernest Warren, D.Sc. 5. Typhlorhyncus Nanus; a New Rhabdocoele: by F. F. Laidlaw, B.A. This part completes vol. xlv. and contains the index for that volume.

New Inventions.

(1) A CLOSED WATER STORAGE SYSTEM; AND (2) AN AUTOMATIC FLUSHING APPARATUS.

1. Two sanitary appliances, the inventor of both of which is Mr. Grundy of 13, King William-street, London, E.C., are deserving of attention inasmuch as they promise to remove many serious drawbacks to existing systems. To start with, the objections to an open storage system are well known, to overcome which it has been suggested to make the cistern a kind of expansion of the rising main, but hitherto this has not been found convenient. Mr. Grundy, however, appears to have found a solution of the difficulty though we are not sure that his system does not present some practical obstacles. The cistern is completely closed and is placed sufficiently high to supply all the services in the house, the water passing from the main *viâ* the storage-tank without being exposed to the atmosphere. This is done in part by abolishing entirely the ball valve and substituting for it the check valve shown in the illustration. Water passes upwards through this valve but cannot return. At the top of the cistern an outlet is provided at the foot of which is a valve float which, as soon as the cistern is full, checks an overflow while trapping the water in the cistern at the pressure of the main at that level. In the event of the main supply failing the cistern contains a store which is easily drawn off, air gaining entrance at the float valve. The valves are of excellent workmanship and design and would replace with advantage the old and somewhat clumsy ball valve, while they avoid the exposure of the water to contamination from without. 2. The automatic flushing apparatus is started in action either by the seat of the closet or by a foot lever acting on a two-way valve. The cistern is empty until either the seat or foot lever is actuated. The flushing cistern is closed, so that the water contained in it is under the pressure of the main which in most instances is great and which thereby effects a powerful yet comparatively silent flush. It is obvious that by this system the pollution of water by the return of foul air up the pipe is prevented, while the cistern being closed there can be no contamination from impure air coming into contact with the surface of the water. Both appliances are a decided advance upon



the usual fittings used for this purpose and their installation would undoubtedly provide a most sanitary method of storing water and of using it both for drinking and flushing purposes. The disadvantages to the system are its cost and the great weight of the storage cistern. Everything would require to be made particularly strong to withstand the pressure of the main supply which, as we have said, in many instances is great. It is only fair to add that the fittings are beautifully made and are of first-rate material. We have inspected an installation which we found to be working most satisfactorily.

AN IMPROVED CISTERN.

IT is desirable that the cistern containing the water-supply for domestic use should be as free as possible from projections on which dirt and decomposing matter can easily accumulate. As a rule, the average cistern presents rivets and other projections which are favourable to the deposit of dirt in the storage tank. In order to remove this real objection Mr. T. B. Leech (of the Blackwall Galvanised Iron Co., Limited) has designed a steel-welted cistern with a uniform surface and with no projecting rivets. Moreover, the corners at the bottom of the cistern are filled in with triangular sheets of metal slanting downwards. The whole surface is carefully galvanised. The cistern may be commended since its object is to maintain the cleanliness of the domestic water-supply.

ASYLUM-SHYNESS.

(FROM A CORRESPONDENT.)

IT is now so well established that insanity may result from disease of any organ of the body and that it is not necessarily dependent on primary affection of the brain and nervous system that there is difficulty in understanding the rooted objection in the upper classes to placing people in private asylums or hospitals, where at any rate there is some amount of official supervision, whilst they do not hesitate to put them in "homes" which are in no way supervised and which may or may not be carried on in the most unexceptionable manner. To account for this the general notion of hereditary taint has much to answer for. It seems to be thought that because a person has been placed in an institution for the insane the offspring of necessity is tainted with an opprobrious history which handicaps them in the race of life. That such a dread of the very name of an asylum does exist cannot be denied, but it is a most unreasonable idea to hold, and the result is that another form of imprisonment is substituted for the comparative freedom of the hospital for the insane. If it were generally accepted, as it ought to be, that insanity due to the direct hereditary transmission of primary disease of the nervous system is by no means common and that the "asylum" is merely a place where the nervous symptoms due to general disease are treated there should be no more objection to acknowledging that a friend or relative has been treated in such a hospital than there is in saying that he has been ill in bed from jaundice or pneumonia. It cannot be denied that insanity is in some instances distinctly hereditary—and if so, what is the use of trying to burke the fact and so to establish an entirely false relationship of the individual to the community?—but very often the fact of having had an insane progenitor is not of the least consequence *qua* the sanity of the offspring, and it is only ignorance that makes people speak in bated breath of the fact of somebody's wife or husband having been placed under certificates. That an individual has never been in an asylum does not prove his sanity—it merely shows that he has not been certified to be insane and it leaves the task of finding out a neurosis to those whose concern it may be. Do those who for matrimonial, business, or other purposes inquire if a person has at one time been in an asylum ask if he or she has ever been placed in a "home," and do they recognise that these "homes" are often asylums without the name, but with possibly harsh and at times cruel conditions? There are numbers of places where people suffering from nervous and early insane states are confined, without external supervision, under restrictions of enforced stay in bed, of complete isolation from their friends and from the external world, where they can neither see the newspapers nor communicate with their relatives—where they are, in fact, confined as in asylums without the security of the latter, and where they are subjected to systems of treatment which they have not the power to resist. Such isolated treatment is not necessarily wrong—it may be quite beneficial to a person to be kept in bed, stuffed with milk, and made to "gain weight" like a Strasburg goose—but it represents also a possible source of restraint to which people may be subjected, and there seems to be no law of registration or any guarantee that persons so detained can leave these places when they choose, or that they may not be placed in them by interested persons without any certificate or warrant. This system of to-day has arisen chiefly from the dislike of people to have it known that their relatives have ever been in an asylum, whereas if it were made clear that insanity in the parents does not of necessity connote insanity in the offspring, and that very often insanity on one side or the other is an accidental symptom of no meaning at all as regards hereditary transmission—if this true view were better known there would be less hesitation in responsible persons to allow the treatment of their friends or relatives in properly inspected institutions. Although there is no reason to think that patients are unduly detained in private asylums, it would be much more satisfactory to the public if the owners of these institutions, who are generally the people responsible for the medical treatment of their patients, were to annex to their staff some independent medical man. The medical owners of private asylums are invariably courteous and they give the most free access to the visits of any medical man deputed by the friends to visit an inmate, but the public should understand that there is no stigma in having their relatives in an asylum or hospital for the insane; and this better appreciation might be aided by the appointment of some general and well-established medical man in the neighbourhood who would form a link between the disease of the general hospital and that of the special one. It seems hopeless to expect that in the lower classes the stigma of having been treated in an asylum will ever be eradicated, because employers of labour are very suspicious of having in their midst anyone who is known to have been at any time placed in such conditions, and thus it comes about that the stigma of insanity means starvation; but the better classes are, or should be, too well informed to be ignorant of the fact that hereditary taint is very wrongly interpreted in the majority of cases, and that any attempt to elude the laws drawn up for the protection of persons in public or private retreats is sure to result in a form of seclusion which may be all the worse because it is secretly enforced.

NOTIFICATION OF PHTHISIS AND CHICKEN-POX.—The Cardiff Health Committee has decided to ask medical practitioners to notify cases of phthisis voluntarily at the same fee as for diseases notifiable under the Infectious Diseases Notification Act.—The Gloucester City Council on March 26th decided to include for one year chicken-pox in the list of diseases to be notified under the Act.

THE LABORATORY OF THE SCOTTISH ASYLUMS.—In his report on the work of this laboratory for the year 1901 Dr. W. Ford Robertson, the pathologist, states that investigations on the following subjects have been in progress during the period in question:—(1) On the Intercranial Lymphatic System, by Dr. A. C. Heath; (2) the Vascular System in Paralytic Dementia, by Dr. A. C. Ainslie and Dr. A. Aitken Ross; (3) Pathological Anatomy of Mongolian Idiocy, by Dr. David Waterston and Dr. Edwin Matthew; (4) Comparative Neuropathology (Tabes Dorsalis in Man and Nervous Disease in Horses), by Dr. D. Chalmers Watson, Dr. Isabella D. Cameron, and Dr. Isabel Watson; and (5) Pathogenesis of Paralytic Dementia, by Dr. Robertson and Dr. Lewis C. Bruce. Arrangements are being made by which bacteriological observations may be carried out upon cases of insanity by workers connected with the laboratory; Dr. Robertson considers that in this direction important results are to be hoped for. The laboratory, which is at 7, Hill-square, Edinburgh, is supported by the voluntary combination for that purpose of 18 of the Scottish asylums. The receipts for the year ended Dec. 31st, 1901, amounted to £726 and the expenditure to £721. Sir John Batty Tuke is chairman of the board of management and Dr. T. S. Clouston is the secretary and treasurer.

THE LANCET.

LONDON: SATURDAY, APRIL 5, 1902.

The New Royal Warrant for the Army Medical Service.

IN calling the attention of our readers to the Royal Warrant for the Army Medical Service, the text of which appeared in THE LANCET of March 29th, p. 912, we deemed it necessary to point out that it should not be regarded as embodying in full the intentions of the Government in respect of army medical reform and reorganisation. Although the new Warrant is a lengthy and somewhat complicated document which requires to be carefully read and to be considered in detail there are several important points which, being foreign to a Royal Warrant, do not find any place in it and concerning these and others which suggest themselves we have still to await further information. For instance, we have yet to learn a good deal about such matters as the following: the number and nature of the new examinations; the functions of the Advisory Board and the limits circumscribing its sphere of action; the provisions to be made for study-leave for medical officers and for the establishment of the proposed army hospital and medical school in London; the organisation of an army sanitary department during times of peace and of war; and the attachment of medical officers to regiments and the way in which this is proposed to be carried out. These are all matters of public and not merely of departmental interest, because they have a direct bearing on the future efficiency of the Army Medical Service. There is, moreover, the question of the pay and position of medical officers in India and it is imperative that this should receive a satisfactory answer.

With respect to the examinations we are assured that the competitive examination on entrance will be made as practical and clinical in character as possible and that the others will be of such a nature as is really needed for the protection of the service and in the interests of the medical officers themselves. We do not profess to attach the value to examinations as a test of what is wanted in a medical officer that many do. The medical candidate for the army has, as a rule, only just been emancipated from a series of examinations in order to obtain his professional qualifications and there is consequently the less need to subject him afresh to such tests at an early stage of his career.

The present position and pay of officers of the Royal Army Medical Corps, whilst serving in India, is a matter of such importance that we cannot believe that the War Office authorities will be content to leave things as they are and thereby imperil the success of their scheme—as they assuredly will if nothing be done. As we understand the position, the War Office of this country regards any independent authoritative action on its part in this respect as *ultra vires*; and that the consent of the Indian Government to any scheme affecting medical officers in the pay of, or serving under, that Government should first be obtained, is, officially speaking, obviously reasonable and right. But Mr. BRODRICK, when introducing the army estimates for the coming year and putting forward his much larger scheme of army reform, had to encounter and to overcome not only the opposition of the Chancellor of the Exchequer in this country but also that of the Secretary of State for India on the ground of the great additional expenditure involved by it. So must it be in the present case. It is, moreover, pertinent to remark that there is every reason why the Indian Government should deal justly and even generously with the medical officers serving with British troops in India, seeing that when the station-hospital system was introduced many years ago into that country it gave rise to a very large saving to the Indian Government, not one penny of which was appropriated to the benefit of the medical officers; indeed, the introduction of that system, while adding greatly to their responsibilities and labours, actually deprived them of some pecuniary advantages.

We may say, in conclusion, that we see no reason for altering our first impressions of the new Warrant—namely, that it contains many new and excellent points and that taken as a whole it is a good Warrant; and having no sort of doubt that Mr. BRODRICK was, and is, sincerely desirous of making it satisfactory to the country and to the profession, we confidently look to him to see that it is interpreted and carried out in a wise, just, and liberal spirit.

The Housing of the Poor.

WE recently published[1] an appeal for funds on behalf of the Mansion House Council on the Dwellings of the Poor addressed to us by Sir JOSEPH DIMSDALE who has been its honorary treasurer for several years and who during the present year is also its chairman by virtue of his office of Lord Mayor of London. The Mansion House Council is an admirable association carrying on an excellent work effectively but quietly, so that many who might be willing to support it are possibly quite unaware of its existence and its aims. Founded in 1883 it has for its object the improvement of the homes of the poor in the metropolitan district and it seeks to effect that object by enforcing the Sanitary Acts and by spreading, as far as it is able, the knowledge of sanitation among the people. In cases where the enforcement of the Sanitary Acts is clearly the duty of a local authority, but where that authority is uninformed or is wilfully neglecting its duty, the Mansion House Council presses the matter upon the attention of the lagging public body, so that the necessary stimulus is imparted and the steps prescribed by law are taken.

The Mansion House Council employs but three paid inspectors, who make about 8000 inspections in the course of a year, and the bulk of its operations all over the metropolis is carried on by local committees and voluntary helpers. A society, however, that organises and directs, even though it may employ voluntary assistants, cannot live without funds

[1] THE LANCET, March 15th, 1902, p. 772.

and a glance at the balance-sheet included in the council's report for 1899 and 1900 will show that its resources are small and are administered economically, while it must be plain to all that an increased income means the possibility of an enlarged sphere of activity. Turning to the body of the report referred to for information we find an exhaustive record of work done by the council and of matters affecting the subject in which it interests itself. As an example of its operations we may call attention to a table in which 4927 cases are described as "central office cases"—that is to say, cases in which the inspectors of the council examined premises with regard to which complaints had been made to it. These cases were examined in one year, 1899, and 1607 of them were during the course of the year "dismissed as remedied," while 2250 were "dismissed as trivial or no defects," from which it will be evident that the council on the one hand is able to insist effectively where remedy is needed and that on the other hand it proceeds in a reasonable spirit and does not condemn where it finds no substantial fault. The balance of the cases in the list we quote from were carried over to the following year, and, indeed, the work of curing the evil arising out of the congested state of London is not a task that can be rapidly completed either as a whole or in individual instances. It may take many months, even years, to rouse a public authority to a sense of its duties to discover who is the proper person to be made liable for the defective drainage of a slum dwelling. And when he is found more time is required to bring home his liability to him before a magistrate, while he has then to commence the necessary work of sanitation.

One of the important legal points to which the Mansion House Council calls attention is the question of the landlord's liability to compensate a tenant under Section 75 of the Housing of the Working Classes Act, 1890, where he has ostensibly contracted himself out of his liability. The section in question decrees that "in any contract for letting for habitation by persons of the working-classes a house or part of a house, there shall be implied a condition that the house is at the commencement of the holding in all respects reasonably fit for human habitation." This in effect puts the letting of an unfurnished house or rooms to a working man on the same legal basis as the letting of furnished premises. It is an important section for working men to be aware of and for those interested in the public health to enforce. In one case recorded in the Mansion House Council's report a landlord was sued under this section for injuries received by the plaintiff owing to the dilapidated condition of a flight of steps and in this instance the landlord had judgment given against him. In another similar case, however, which the council considered, it was met by the fact that the complaining tenant had apparently acquiesced in a condition inserted in his rent-book, by which the landlord was freed from all liability imposed on him by the section in question. It will be observed that the section only speaks of an implied condition, and, as a rule, no doubt, an express condition overrides an implied one, so that we are not surprised to find that the opinion of counsel taken by the Mansion House Council was, on the whole, against the possibility of rendering a landlord liable in such a case. In this view the Mansion House Council, the Local Government Board, and the London County Council appear to agree, with the result that although the last-named body deems that legislation is desirable to prevent the landlord from "contracting out" the landlord who is astute enough to do so will probably for the present continue to protect himself, and as his tenants will be persons anxious to find house-room, and ignorant for the most part of their rights, he will probably succeed in doing so. In calling attention to defects such as this in the laws affecting sanitation, and in helping to enforce these laws wherever it can, the Mansion House Council is doing good work and we are in full sympathy with its request for funds. The law, while far from perfect, is still capable of effecting much if vigorously and consistently carried out. Its inefficiency usually arises from one of two causes, the inactivity or the ignorance of those governed by it, and this inactivity or ignorance the Mansion House Council claims to stimulate or to instruct.

The Anti-Vivisection Question.

THE columns of the *Times* for the past three weeks have contained letters dealing with the alleged abuse by physiologists of the position conferred upon them by the laws of their country in the matter of experiment upon the lower animals. Letters have also been published in reply to these, alleging, and in certain details proving, that the secretaries of the anti-vivisection societies have disseminated misleading literature to the public and have generally not conducted their opposition to the work of practical physiology in a candid manner. The correspondence in the *Times* has not yet come to an end and in our opinion our contemporary is doing thoroughly good service to the public by allowing the whole question of anti-vivisection to be thoroughly threshed out. It was probably with deliberate intention to clear the air by provoking a storm that some of the more contentious effusions have been published. In themselves several of them are ridiculous, but as contributions to a controversy they play their part, showing the mental attitude of the writers and giving the public a chance of gauging the general wisdom of their party. Nothing but good to the cause of humanity, as well as to the cause of science, should come from the publication of these letters; for the public, if it has read them and is reading them carefully, cannot fail to see on which side right lies and cannot fail to detect which is the genuinely charitable man, which is the self-important propagandist, and which is the blubbering sentimentalist.

We are asked now and again by our readers what course they should pursue when an emissary of one of the anti-vivisection societies proposes to take the floor at the local town hall and to show up the loathsome cruelty of the medical profession. Our usual reply is to counsel inaction. Our motive in so doing has not been simply barbarous, although we are aware that to disregard the "arguments" of the platform anti-vivisectionist is to hurt him in his tenderest spot. Our motive has been rather to spare members of our profession needless trouble. Physiology is not a subject that can be made intelligible to the public at any time, while the cause of truth can never be served by arguing about the due relation of physiology to therapeutics with a man who has received no scientific or medical training. And on

reading the correspondence upon anti-vivisection as it appears in the *Times*—a correspondence which really throws remarkable sidelights upon the controversy because of the many minor issues which have been debated by the various writers—we have come to the conclusion that as far as the medical profession is concerned indifference is still the proper position. The anti-vivisectionists believe what they wish to believe, and those of them who are actively concerned in endeavouring to convert others to their view seem to regard all contradiction by the medical profession as the base attempts of a blood-stained crew to escape chastisement for their deeds of callous brutality. We have never imputed similar depravity to the anti-vivisectionist leaders, even when we see them maligning their superiors in knowledge or trying to wreck the labours of the truly charitable. We know their ignorance of the scientific work that has been done and of the scientific reasons that have led to the doing of it, their ignorance of the enormous alleviation of human ill that has directly followed physiological research in connexion with the lower animals, their ignorance even of the meaning of the physiological terms which they are bold to employ. These are the things which make it impossible for the medical man to argue with anti-vivisectionists of the more rabid order. And it is just because medical men are too closely interested in the question and possessed of too special a knowledge to be the proper people to traverse the anti-vivisectionists' conclusions that we welcome the assistance of the lay papers—the organs of public opinion. A medical man may be an authority upon a neurological point, but he cannot discuss it with a man ignorant of neurology. Medical men, again, are at least as good judges as are their critics of what is right and what is humane; they have as just an appreciation of the place which the lower animals should fill in our lives as has any official of an anti-vivisection society. But as it is the morality of medical men and that of their professional leaders that is impugned their general testimony, like their scientific testimony, is not of great avail. The well-reasoned views of the lay press enable the public to grasp the real issues of the question.

The *Times* and other influential journals refuse to credit the suggestion that a large body of well-educated men, engaged in work ancillary to a profession which is admittedly existent entirely to alleviate human pain, have become callously and brutally cruel as a class and as individuals. The conditions under which physiological experiments are now made constitute reasonable safeguards against cruelty. Even if the monstrous supposition that all physiologists were animal-torturers held good the laws of the land are sufficient to prevent such cruelty from being habitual. Against these statements we have the propaganda of the anti-vivisection societies. There can be no doubt on which side public intelligence will range itself. Despite the noise which the anti-vivisection societies occasionally make their recruits are neither numerous nor inclusive of any men of high intellectual standing. Excellent soft-hearted people they would appear to be, hating only common sense and physiologists. We trust that the result of the correspondence in the *Times* will be to give some of their leaders pause. There are the names of a few influential persons upon the lists of patrons whose actions might be copied by their social inferiors. We would ask them to consider if they honestly think that humanity demands the institution by anti-vivisectionists of an organised attack upon the funds of the London hospitals? If they think so let them continue to support the sentimentalists.

Annotations.

"Ne quid nimis."

THE OBSTETRICIAN—PHYSICIAN OR SURGEON?

A CONTROVERSY is now going on at the Lincoln County Hospital bearing upon the old question as to how far an obstetric physician is justified in doing major surgical operations in a hospital. The facts are as follows. Some two years ago a gentleman was elected to the staff of the hospital as physician. Sundry gynæcological cases having been admitted under his care he has been in the habit of performing minor operations, such as curettage of the uterus, although remonstrated with by the senior surgeon. Recently this physician gave notice that he was about to perform an oöphorectomy, whereupon the surgical members of the staff, excepting the senior surgeon who chanced to be away, pointed out that hitherto it had always been the custom for such operations to be performed by the surgeon for the week in which the patient chanced to be admitted. A memorandum to this effect, signed by the whole staff except the senior surgeon and the physician in question, was handed in to the weekly board and this board decided that it was not outside the province of a physician to perform gynæcological operations. The matter is now to be referred to the quarterly board of governors which will meet on April 10th. The medical staff of the hospital has ascertained the practice at 35 other provincial hospitals comparable in size and in other respects to their own, and in all of these major gynæcological operations are handed over to the surgeons, although in some hospitals minor operations such as curettage are performed by the physician. It seems to us that the matter is not one in which there can be any hard-and-fast rule. To take the case of London. In all the big hospitals gynæcological and obstetrical cases are under the charge of a physician who has nothing to do with ordinary medical cases. In some of these hospitals all gynæcological operations are performed by the obstetric physician, including such as involve a laparotomy. In others the obstetric physician performs only such operations as curettage, operations on the cervix uteri, or repair of vesico-vaginal fistulæ, while operations involving a laparotomy, such as oöphorectomy, hysterectomy, operations on the tubes, and the like, are handed over to one of the surgeons, either to the surgeon of the week or to that member of the surgical staff who is definitely appointed for the purpose. In regard to the position at Lincoln we think that precedent should be followed until such time as a new rule is made, not merely by a weekly board but by the governing body of the hospital, including the staff. The physician in question when appointed to his present post either knew the custom of the hospital or he did not know it. If the former he has no right to alter the position which he knowingly accepted; if he accepted the post in ignorance of the customs governing it he again has no right to alter the terms of his tenure on his own initiative.

LONGEVITY.

IN an article entitled "Modern Methuselahs," published in the *Evening Standard* of March 19th, reference is made to a man named Michael Solis who in 1878 was living in Bogotà,

United States of Colombia, South America, and at that time claimed to be 184 years old. The writer goes on to say that "there is very little doubt about this remarkable case. THE LANCET investigated it thoroughly in 1878, and came to the conclusion that the man was at least 180 years old then." This is evidently an over-estimate of the attention which we have given to this particular instance. The facts are that in our issue of Sept. 7th, 1878, p. 343, we mentioned the current rumour on the subject and spoke of the man's alleged age as "offered for our credence." Moreover, a fortnight afterwards—namely, on Sept. 21st, at p. 427—we published a letter from Dr. W. L. Dudley of Cromwell-road, South Kensington, who had resided for over 20 years in Bogotà and had been physician to the General Hospital and to the British and American Legations. This gentleman wrote to us that, speaking within his knowledge, he would judge that the age of this individual, six years before the date of writing, was between 80 and 90. He added that longevity was rare in these districts and that there was no baptismal or other kind of registry in the city. Readers in search of "records" of longevity may perhaps be gratified by the perusal of Mr. Charles W. De Lacy Evans's "Can We Prolong Life?"[1] reviewed in THE LANCET of June 21st, 1879, p. 884. An antidote to Mr. Evans's extravagancies will be found in the first half of Mr. T. E. Young's interesting and scientific summary of the present state of knowledge on this subject.[2]

THE KING'S CORONATION DINNER TO THE POOR.

LENT being over it is natural that the thoughts of men should turn to feasting. His Majesty the King, as we announced in THE LANCET of March 22nd, p. 840, has signified his intention of giving a dinner to 500,000 of his poorer subjects so that they may share the joy of the coronation in a tangible form. The money for this feast is at hand, supplied by His Majesty from his own purse, the food is easily obtainable, and there will be no lack of guests. But to bring the food to the right persons will call for powers of organisation scarcely inferior to those at present demanded by the situation in South Africa. In 1897 we expressed our opinions as to the carrying out of the Jubilee dinner organised by the gracious lady who was then Princess of Wales. In our issue of May 22nd, 1897, p. 1423, we said:—

> We have no details at present as to how the scheme of feeding these poor people is to be carried out, and in our opinion a vast amount of careful organisation will be required if the project is not to end in failure. That there is a terrible depth of bitter poverty in London no one can doubt, but as a rule it is just the most deserving who hide their misery and prefer to suffer in silence. Will any steps be taken to seek out the really deserving and, more important still, will there be any attempt to confine the dole to the poor of London alone? If something of this kind is not attempted every scoundrel or loafer—all those who have never done any work and never mean to do any—will come from all parts of the kingdom and batten on the charity provided. This was the case some years ago when the Mansion House famine fund was started; the metropolis was inundated with provincial tramps and there was great doubt as to whether the really needy profited at all. Another matter of vital importance is the likelihood of the spread of infection by the gathering together of those who owing to their mode of life are most prone to contract and disseminate infection. The revelations made some year or so ago by Dr. Waldo about Salvation Army shelters showed that even under ordinary circumstances the crowding together of the homeless was anything but free from danger and such danger will be multiplied a thousandfold in the coming month. The most careful watch should be kept upon all lodging-houses and workhouses on the roads leading into London as well as in that city itself and we think that some attempt should be made to see that the food supplied does not go to fill the bellies of those who make a trade of poverty.

We have no wish to pose as alarmists and so far as statistics show no increase in the number of cases of infectious disease for 1897 could be traced to the crowds assembling for the Jubilee celebrations. But still the risk has to be thought of and precautions should be taken, for owing to the increase in population and the world-wide interest taken in the coronation all the points of difficulty which we have mentioned above exist with even more force to-day than in 1897, more especially in face of the small-pox epidemic, as regards the danger of the spread of infectious disease. It would be well, we think, if some method could be hit upon of excluding those who have not resided in London for a certain time—at least since Christmas Day, 1901—but perhaps this check would be impossible to impose. In the meantime, we can but await details of the organisation by means of which the scheme is to be carried out.

THE STAGES OF THE MALARIA PARASITE AND THEIR TERMINOLOGY.

PROFESSOR LANKESTER has devised and communicated to the Royal Society a set of terms applicable to the complicated series of stages through which the parasite causing malaria passes during its life-history in the mosquito and in ourselves. The aim is that the terms made use of should explain themselves; and, accordingly, such vague and barely explanatory terms as "sporozoites" and "blasts" are dropped out of use and replaced by a new set which have the merit of serving as a *memoria technica* to the student desirous of remembering the manifold changes exhibited by the sporozoön of malaria. We may conveniently commence with Professor Lankester at the spore which is injected into our blood by the bite, and with the saliva, of the anopheles. This spore, a minute needle-shaped particle, is formed in the gnat's body, and as we naturally look upon the most important stages in its life as being those which are passed in our bodies the name of "exotospore" may be applied to this acicular spore as indicative of its origin *outside* our bodies. These spores ultimately enter each one of them a red blood corpuscle, though the actual mode of their entry has not yet been observed. Arrived within the blood disc they lose the acicular shape and become amœbiform. For this stage the expression "amœbula" is used. The amœbula grows and moves about as far as possible within the blood corpuscle; finally it breaks up into a number of spherical spores which are set free by the destruction of the red blood corpuscle. To these spores, the third stage in the life-history of the sporozoön, the term "enhæmospores" is applied by Professor Lankester. The term signifies, of course, that they are formed within the blood of the infected human being. The enhæmospores remain in this condition for several generations, entering other corpuscles and multiplying by further division. It is this process which infects the whole body with the parasite. After a certain time, which varies, and owing to conditions which have not yet been ascertained, the enhæmospore ceases to break up into fresh enhæmospores but grows largely in size and becomes different in shape. This stage is commonly crescentic in form; it still remains within the red blood corpuscle which loses its pigment; the pigment is devoured by, and undergoes slight alterations in colour within the body of, the sausage-shaped or crescent-shaped parasite. This is designated the "crescent" or "crescent-sphere." This fifth stage, the "crescent," is to be differentiated from those which have been already considered by the important fact that it is sexual, but no means exist of distinguishing the male from the female crescents, except, of course, their subsequent behaviour. It is, moreover, the last stage which we find in the human body. Arrived at this stage the parasite can undergo no further development unless it is sucked up by a mosquito. When this latter event happens the crescents become rounded and from the one kind, the male, develop spermatozoa much in the fashion after which they develop in the sperm mother-cells of the earthworm—that

[1] Baillière, Tindall, and Cox, second edition, 1885.
[2] On Centenarians. London: Charles and Edwin Layton. 1899.

is, the periphery is converted into spermatozoa, while the central mass remains undifferentiated. This stage is to be called "sperm mother cell," while the corresponding female body is termed the "egg cell." The result of the fertilisation of the last by the first is the "zygote." The zygote grows and becomes vermiform in shape, exhibiting fairly active movements. To this stage, which is the largest in point of bulk, the term "vermicule" is applied. Up to this point the parasite has remained within the stomach of the gnat. But the vermicule by the help of its active movements pushes or bores its way out of the stomach and gains access to blood-spaces, enveloping that organ, where it acquires a spherical form, enlarges greatly, and surrounds itself with a structureless membrane. This may be called the "cyst" or "spore-cyst." From the breaking up of the protoplasmic contents of this enlarged cell the exotospores arise and the cycle is completed. This latter process is not, however, direct. The cyst at first breaks up into smaller "spore mother cells" from which latter the needle-like exotospores are formed by subsequent division. Professor Lankester's paper concludes with a useful tabular comparison of the stages in the life-history of this hæmosporidian, as the group of the order sporozoa which contains the malaria parasite is called, with the corresponding stages exhibited by the two other subdivisions of the order—viz., the gregarinidea and coccidiidea.

GLAUCOMA FROM A LAYMAN'S POINT OF VIEW.

A COMMUNICATION which will be found in another column of our present issue demonstrates the advantage that may be obtained from an account by an educated layman of his own symptoms in cases of disease. In this instance the affection was diagnosed by the ophthalmic surgeon, Dr. C. E. Glasscott of Manchester, under whose care the patient placed himself, as one of chronic glaucoma, and a grave forecast of the result was given. This view was subsequently supported by Professor A. Maitland Ramsay and was fully borne out by the progress of the disease. The patient, who seems to have been one of the victims of the struggle for existence in these days, was originally strong and vigorous and could, he tells us, cover 30 miles in a day without distress. He attributes the onset of the glaucomatous symptoms to a combination of constant mental worry and excitement, over-exertion of the eyes in literary work, and the damp and cold climate of the North-west of England. He gives a graphic account of the early stages of the disease, including the ciliary neuroses, fogs, and obscurations of vision and flashes of light that are so commonly observed. Various symptoms mentioned, however, seem to show that the case was not one of pure glaucoma, but that the central nervous system was more or less implicated, as, for example, the kind of paralysis of the nose, the lips, and the chin, making speech occasionally quivering, the periodical numbness of the forehead, and the occurrence of fantastic designs, figures, and phantasmagoria which do not commonly accompany glaucoma. No mention is made throughout of increase of tension in the eyes, though the patient must often enough have been tested to determine this point and must have perceived the importance attached to it by his medical attendants. Presuming the globes to have been normal or subnormal we think that a wise conclusion was arrived at in abstaining from the performance of iridectomy or any of the substitutes for that operation. At the same time it is easy to conceive that differences of opinion in regard to the cause and nature of the disease might have led to different modes of dealing with it in the hands of different practitioners. We have, however, no desire to comment on the treatment pursued, but we have published the case as extremely interesting because it is rare to meet with a clear account of the progress of any disease from the patient himself, and where such patient is intelligent symptoms may be noticed which the surgeon might easily overlook but which might afford valuable hints in regard to treatment.

SMALL-POX IN LONDON.

THE returns of small-pox for the past week are as follows: On Saturday, March 29th, there were 48 fresh cases notified and removed; on Sunday, the 30th, there were 46 fresh cases; on Monday, the 31st, there were 61 fresh cases; on Tuesday, April 1st, there were 62 fresh cases; and on Wednesday, the 2nd, there were 57 fresh cases.

THE CONTINENTAL ANGLO-AMERICAN MEDICAL SOCIETY.

A PROPOSAL by Dr. F. H. Burton-Brown (of Rome) was laid before the annual meeting of the Continental Anglo-American Medical Society that a luncheon of the society should be held every year at the meeting of the British Medical Association. A special committee was then appointed to consider how far the proposition could be carried out with a prospect of success. Any members of the society who propose to be present at the annual meeting of the British Medical Association to be held at Manchester in July, 1902, are requested to write to that effect before leaving their winter quarters to one of the members of the special committee: Dr. D. W. Samways, Place St. Roch, Mentone; Dr. Leonard N. Robinson, 1, rue d'Aguesseau, Paris; and Dr. StClair Thomson, 28, Queen Anne-street, London, W.

ACHONDROPLASIC DWARFS, HISTORICAL AND PREHISTORIC.

DR. FELIX REGNAULT has recently published an interesting study of the action of achondroplasia in producing dwarfism not only in the human subject but among the lower animals as well. His article, which is profusely illustrated and fills 24 pages of the February number of the *Archives Générales de Médecine*, does not deal with living examples but with museum specimens, individuals of whom historical accounts or portraits are extant, ancient Greek or Roman statues, and pictorial representations on Egyptian monuments. In the achondroplasic fœtus the long bones are shortened and thickened and the deviations from the normal straightness which they present are not gradual curvatures but are obviously angular; the resulting appearances are distinguished from the effects of intra-uterine fractures by the fact that in achondroplasia the bendings of the bones are symmetrical on each side at the same level; the deformities produced by intra-uterine rickets differ also from those of achondroplasia, for the former are gradual curvatures of considerable radius. In achondroplasia the facial bones seem to recede and the forehead to project, the nasal bones being at the same time flattened. In adult subjects the shortening of the long bones is more pronounced in the humerus and the femur than in the radius and the tibia and the three middle fingers are of equal length; the skull is large and brachycephalic; the facial and nasal bones are as already described. Among the dwarfs whose likenesses have been preserved from past generations Dr. Regnault distinguishes those whose condition was due to achondroplasia on the one hand or to myxœdema on the other. Two of his achondroplasic dwarfs are (1) Owen Farrel, an Englishman who died in 1742 and whose portrait is in the Royal College of Surgeons of England; and (2) Sebastien de Morra, a servitor of Philip IV. of Spain. Two of his myxœdematous dwarfs are Tom Thumb and Simon de Paap, a Dutchman who was exhibited in the early years of the nineteenth century. Among the ancient Egyptian deities the figure of Phtah is

that of an achondroplasic dwarf and the figure of Bes that of a myxœdematous dwarf. Achondroplasic workers in metal are represented on the Egyptian monuments, a circumstance which is interesting in connexion with the lameness and deformity of Hephaistos or Vulcan in classical mythology.

THE FOURTEENTH INTERNATIONAL CONGRESS OF MEDICINE.

THE present rate of exchange makes it worth while for all those who propose to attend the Madrid meeting of the International Medical Congress to pay their subscriptions at once as the value of the peseta varies from time to time and it is now low. The necessary forms of application for membership can be obtained from the honorary secretaries of the National Committee for Great Britain and Ireland—viz., Mr. D'Arcy Power, 10A, Chandos-street, Cavendish-square, London, W. and Dr. P. Horton-Smith, 15, Upper Brook-street, Grosvenor-square, W., who are prepared to transmit the subscriptions to Madrid and to supply receipts and cards of membership as soon as they are issued, in return for a postal order of £1 from each member. Ladies if they accompany a member will pay 6s. 8d. for their tickets, which sum is said to entitle them to reductions of fare on the Spanish railways (probably a useless concession for English travellers who take through tickets) and will give them admission to the various fêtes held during the congress.

THE TOPOGRAPHY OF THE CORTICAL DEGENERATIONS IN GENERAL PARALYSIS OF THE INSANE, WITH SPECIAL REFERENCE TO FLECHSIG'S ASSOCIATION-CENTRES.

AN important research by Professor Karl Schaffer of Budapest on the topography of the cortical degenerations in general paralysis of the insane in relation to Flechsig's association-centres of the brain is recorded in a recent issue of the *Neurologisches Centralblatt* (No. 2, 1902). A detailed microscopical investigation was made of the entire brains of three patients who had died from general paralysis, tabetic symptoms having been also present in one of the three cases. Serial sections of the entire brain (cerebral hemispheres, brain-stem, and cerebellum) were made in the sagittal and horizontal planes and were stained with Wolter's modification of Weigert's method to determine the situation of degenerated medullated nerves. All three patients were typical examples of general paralysis with the characteristic symptoms of early dementia, grandiose delusions (megalomania), impairment of speech (dysarthria), and paralysis of pupillary and of facial movements, and they terminated in paralysis, coma, and death. Sagittal sections taken close to the mesial aspect of the cerebral hemisphere showed degenerations of medullated nerves, chiefly in the pre-frontal area (pre-gennal and sub-rostral regions)—i.e., Flechsig's antero-mesial and supra-orbital association-centres, slightly around the lips of the calcarine fissure and moderately in the supra-callosal convolutions (gyrus fornicatus). Sections made in other planes showed various areas of degeneration. The degenerations are classed as "slight" and "marked" and their distributions are summarised as follows. (*a*) Slight degenerations: these were observed in the Rolandic convolutions and adjacent parts of the frontal gyri (kinæsthetic area) in the cuneo-lingual gyri which border the calcarine fissure (visual region) and in the lower temporal gyrus. (*b*) Marked degenerations. These were observed in the pre-frontal lobe (polar and orbital regions), in the parietal lobe (superior and inferior gyri), in the ascending parietal convolution, in the insular and in the temporal convolutions. (*c*) An intermediate degree of degeneration was present in the occipital lobe. A special examination of the brain of the patient whose symptoms were complicated with tabes showed that slight degeneration was present in the ascending frontal convolution and adjacent parts of the frontal gyri, in the cuneus, in the first and last temporal convolutions, and in the nerve-tracks or bundles of the cornu Ammonis. Marked degeneration was present in the pre-frontal lobe, in the entire parietal lobe (including the ascending parietal convolution), in the insula, gyrus fornicatus, and second and third temporal convolutions. A comparison of these regions with the areas delineated by Flechsig in his classical work[1] as "association-centres" of the brain will show the close correspondence that exists between the two. Professor Schaffer concludes that his observations tend to support Flechsig's localisation of the association-centres of the brain, and that the morbid process (degeneration of medullated nerve-fibres) affects chiefly Flechsig's centres—viz., those in the pre-frontal, parietal, insular, and supra-callosal regions of the hemisphere. "The cortical degeneration in general paralysis is not an irregular, diffuse process, but, on the contrary, a regular, localised, selective morbid affection of the cortex." The research is of great importance and must naturally form the starting-point for further observations of similar nature to be made on other forms of insanity.

VACCINATION DIFFICULTIES.

IN THE LANCET of March 29th, p. 906, we referred to certain difficulties which had arisen between the Board of Guardians of Great Yarmouth and Dr. Henry Blake, the public vaccinator. Shortly the story was as follows. About the middle of March Dr. Blake, in view of the approaching Easter holidays and the Yarmouth fair, thought that it would be well to have power to employ assistants as the work of vaccination and revaccination was growing very heavy. He therefore wrote to the Local Government Board and this body wrote to the guardians and recommended them to confer with Dr. Blake. However, at a meeting of the guardians held on March 18th the guardians refused to confer. A special meeting was then called on March 25th when it came out that Dr. Blake had asked the clerk to the board of guardians what he should do to get assistance. The clerk advised him to write to the Local Government Board. Only the clerk forgot to mention this to the guardians. Hence the talk about discourtesy to the board on the part of Dr. Blake which made the guardians refuse to confer with that gentleman after the meeting on the 18th. Peace, however, now reigns and at the next meeting of the guardians Mr. Cass is going to move that the board fix an early date for consultation with Dr. Blake. This is all very orthodox and ceremonious, no doubt, but epidemics will not wait for ceremony and we should like to see some more rapid method by which a public vaccinator could get assistance in time of need than that which Dr. Blake has to employ. Dr. Blake was invited to attend the meeting on March 25th. Why could not the conference have been held then and there? The whole matter could have been settled in five minutes.

COEXISTENCE OF INFANTILE CEREBRAL PARAPLEGIA AND INFANTILE SPINAL PARALYSIS.

AT the meeting of the Société Médicale des Hôpitaux of Paris on March 7th M. Pierre Marie showed an interesting case in which infantile cerebral paraplegia and infantile spinal paralysis coexisted. The patient was a man, aged 34 years. At the age of six months he had convulsions and from this time his paraplegia probably dated. The right lower limb was semi-flexed and adducted and could not be completely extended; the foot was in the position of equinus. The knee-jerk was increased; the plantar reflex was of the extensor type. All the symptoms

[1] Gehirn und Seele, 1896.

were those of typical cerebral infantile paraplegia. The left lower limb presented a very different appearance. The entire limb showed atrophied and completely flaccid muscles. The condition was that of infantile spinal paralysis. This case bears out the view advocated both by Strümpell and M. Marie that infantile cerebral paraplegia is due to a lesion of the motor area of the brain—polio-encephalitis—analogous to the spinal lesion—anterior poliomyelitis—of infantile paralysis. This analogy is borne out by some other cases. Möbius has described the case of a girl, aged 18 months, who was attacked with infantile spinal paralysis at a time when her brother was suffering from cerebral infantile hemiplegia. In 1894 M. Ramy published in the *Revue Neurologique* the case of a man, aged 43 years, who had infantile spinal paralysis of the right leg. At the necropsy there were found patches of meningo-encephalitis affecting various convolutions and a focal spinal lesion in the lumbar region, with atrophy of the anterior roots of the lumbar and sacral nerves on the same side. In the same year Neurath of Vienna in a necropsy on an infant, aged five months, found lesions of the internal capsule and centrum ovale with the lesions of infantile spinal paralysis. Beyer, in 1895, published the case of a woman, aged 22 years, who had had since the age of five years left spasmodic hemiplegia and who had suffered since the age of 12 years from attacks of epilepsy. At the necropsy, in addition to porencephaly of the right hemisphere there was a focus of anterior poliomyelitis. M. Marie pointed out that his case was a new example of the coincidence of infantile spinal paralysis and the cerebral lesions which in the child produce almost indifferently hemiplegia, diplegia, and paraplegia, and that from the point of view of general pathology the case showed the analogy, it might almost be said the identity, between the cerebral and spinal lesion.

BALDNESS AND DISEASE IN THE BARBER'S CHAIR.

FROM time to time we have called attention to the risk of contamination arising from the promiscuous use of brushes, scissors, razors, and other implements, at hairdressers' establishments. Recently the New York Board of Health have confirmed such warnings by issuing an official statement, pointing out that a number of diseases can be communicated by barbers. The suggestion is even thrown out—and this is more likely to alarm the general public—that barbers are perhaps the cause of premature baldness. When this occurs a germ is supposed to attack the roots of the hair and this microbe may be conveyed from one head to the other by a brush. Many young men are bald who cannot be accused of riotous living, and it is often difficult to account for such cases of alopecia. Perhaps it was the hair-dresser's fault. In any case, the New York Board of Health urges that greater precautions should be taken—that barbers should constantly wash their hands in antiseptic solutions, should sterilise their razors and scissors, should protect their utensils from dust, and throw away their alum-sticks. If rubbed on a cut or pimple the alum-stick may convey blood, pus, and pathogenic bacteria to the next person to whom it is applied. Thus loathsome diseases may be contracted from the surface of the alum ointment stick used in America. The question therefore arises whether the barbers will endeavour to meet these new exigencies. Historically speaking, the barbers, whose precursors used to be barber-surgeons, should readily appreciate the advantage of antiseptic surgery and be willing to apply its principles to the minor and painless operations which they now perform. Trivial as these operations may seem they are not absolutely free from danger; and to our knowledge some barbers, both in Paris and in London,[1] have already introduced antiseptic principles into their hair-dressing saloons. They sterilise their metallic combs, their scissors, and their razors by passing them through a flame each time that they are used, and it would be well if these and other precautions were more generally applied.

THE DISTRIBUTION OF PLAGUE.

A TELEGRAM from the Governor of The Mauritius, received at the Colonial Office on March 29th, states that for the week ending March 23th there were 5 cases of plague, of which 4 proved fatal. As regards the Punjab, assuming that there is no mistake in the figures, the news from India, as will be seen from our Indian correspondent's letter at p. 993 regarding the presence of plague in the Punjab, is somewhat appalling. According to the telegraphic intelligence through Reuter's Agency the number of deaths from plague in the Punjab is now averaging nearly 70,000 monthly. Special measures, it is stated, have been taken to prevent the epidemic from reaching Simla. As regards Egypt, during the week ending March 23rd 7 cases of plague and 2 deaths from the disease have been reported throughout all Egypt. 1 case occurred at Kom el Nour, 3 cases and 1 death at Dechneh, and 3 cases and 1 death in 2 nomadic camps near Benha. All these cases occurred among the native population.

THE HISTORY OF ATROPINE.

VERY nearly a century ago it was just being realised that certain plants contained definite bases yielding definite salts when treated with acids. These bases are, of course, well recognised now as the alkaloids, containing amongst their number some of the most powerfully poisonous bodies known to us. In about the twentieth year of the last century these new weapons of the poisoner were on the eve of being discovered as chemically definite principles. According to THE LANCET of March 28th, 1824, as will appear from a glance at the "Looking Back" column in our issue last week, atropine had evidently been isolated in that year although probably not in a state of purity. Still, a definite chemical principle was recognised, for in this column we read as follows: "The property of dilating the pupil, peculiar to these plants [belladonna, datura, &c.], depends on a chemical principle, each of them containing an organic alcaline substance, which can neutralise acids, and form with them salts capable of crystallisation, and possessing very powerful properties. This chemical principle has been named *hyromegine*, from its power of dilating the pupil." The existence of the active principle or alkaloid of *Atropa belladonna* was first announced in 1819 by Brandes, although apparently it was not obtained in its pure state until 1833 by Mein, a German pharmacist. In the excerpt from THE LANCET of Sunday, March 28th, 1824, which was printed in our columns last week it is stated that at the Royal Institute of France Dr. Runges, Professor at the University of Berlin, described, amongst other things, a new method of detecting the narcotic principle of the *Atropa belladonna*, *Hyoscyamus niger*, and *Datura stramonium* in cases of poisoning by those plants. The method was simple and crude and consisted merely in boiling the stomach or intestines of the animal poisoned by these vegetable substances and evaporating the aqueous solution to the consistence of an extract and applying it with a camel-hair pencil to the eye of an animal. Nowadays, of course, better and more delicate means are employed for isolating the alkaloid from complex organic mixtures. The method, shortly, is to exhaust the mixture with acidulated alcohol. After straining through muslin the

[1] Vide THE LANCET, Feb. 8th, 1902, p. 419.

liquid is treated with ether to remove fat and other extraneous bodies. Finally, the residual liquid is made alkaline with potassium carbonate or hydrate and treated with chloroform which dissolves the liberated alkaloid. The chloroform is separated and poured off and on allowing it to evaporate atropine in a fair state of purity will remain which can be tested both chemically and physiologically. This excerpt from an early number of THE LANCET is interesting in relation to the history of alkaloids.

THERE will be a general meeting of the Medico-Legal Society on Thursday next, April 10th, at 5.30 P.M., at 20, Hanover-square, London, for the purpose of adopting rules and appointing officers. All who are interested in the work of the society are invited to attend. Particulars may be obtained from the secretaries, Dr. McCallin or Mr. R. Henslowe Wellington, 20, Hanover-square, W.

IT has been decided to inaugurate a post-graduate course of clinical demonstrations at Westminster Hospital during the coming summer session. The demonstrations will be held on Tuesdays at 4.30 P.M., commencing on May 13th.

SOME ACCOUNT WITH ILLUSTRATIONS OF "CHRONIC GLAUCOMA."

BY ONE WHO HAS IT.

THE records of men who in the cause of humanity and medical science carry a fierce enthusiasm *usque ad mortem* are happily ever being brought up to date. The idea that a man should wilfully contract a disease in order that he may fully grasp its most minute symptoms and be more competent to relieve others who suffer from it is no longer considered a vain phantasy. There are, however, some diseases too malignant or exclusive to be assumed at will and among them must rank specific ocular diseases such as chronic glaucoma which seems to be also known under the title of "grey atrophy."

Pending the time when a medical expert shall contract this disease and lucidly and scientifically describe its most minute details a poor layman, whose only merit is that he suffers from it, gives here his personal knowledge of an undesirable malady in the hope that some reader may see here and there some further light to guide him in his work; and also with the idea that the strange vagaries of the eye alluded to may give some slight further inkling to the cause and seat of dreams, which vagaries may be likened to the probable productions of an automatic photo-camera out of gear.

Physical condition and appearance.—The patient's height is six feet and his weight has never exceeded 11 stones and two pounds. He is active in habits, is somewhat restless, and is nervous and slightly irritable. He has a wiry appearance and a very meagre flesh covering, is a great walker, and is able to get over 30 miles in a day without distress. An advertisement writer, his sight has for many years been taxed to its utmost, but the eyes had never given very serious trouble until about five or six years ago, when his work caused him to live in Manchester, which, on account of its ceaseless clatter and humidity, is a stronghold of nerve shatter and rheumatism. After about 18 months' residence there the patient was attacked by what was at first called muscular rheumatism but which eventually developed into general neuralgia, appearing at gradually lessening intervals. Two years ago the nasal nerves were specially affected, and as a result twice or three times a week there was a copious watery discharge from the eyes and nose. This usually came on at night suddenly and was preceded by a sharp stinging sensation in either nostril. This prevented sleep and in the daytime made work very difficult, necessarily causing considerable worry. Slight failure of the eye then occurred, of which, unfortunately, little notice was taken. Rather more than a year ago reading became difficult, the letters appearing to flow into one another, fancy-pointed type being most easily discernible. This appears to bear out what a writer in a recent issue of THE LANCET stated, as to a man suffering from partial blindness being better able to read Greek than any other language. On consulting Dr. C. E. Glascott he diagnosed the disease as chronic glaucoma, a hopeless complaint, always going from bad to worse and liable through influenza or a bad cold to end in darkness. No treatment was likely to be of any avail, and the only vestige of consolation lay in the fact that a kind of record had been established by the disease being contracted at the age of 40 years instead of at 60 years, as usual. The general outlook at this period presented the appearance of a continuous summer haze.

Rapid development of the disease.—In two months' time a slight mist had grown into a thick fog of a dark grey aspect. Further medical assistance was sought, Mr. E. L. Luckmann of Altrincham Eye Infirmary taking the case in hand and giving tonics to which iodide of potassium was added. This treatment had a decidedly beneficial effect and appeared at least to arrest the progress of the complaint and even at times to improve the vision. Unfortunately, however, owing to a very bad chill, caught when making a sea trip to Glasgow, the small hopes of amelioration were dispelled, and with the exception of a slight appreciation of the light a state nearly approaching to blindness ensued and the patient had to be led about. The following illustration represents the patient's view of part of the country through which he walked on his first visit to Altrincham. It looks as if the peaceful fields were being shelled by an enemy. The phenomena only occurred after much physical exertion and the bursts of light were accompanied by a very slight cracking noise. (Fig. 1.)

FIG. 1.

This shows the patient going along a country road, fields on either hand. The lighter spots locate the apparent position of the bursts of light referred to.

It should be mentioned that this ocular peculiarity occurred after considerable physical exertion only. This next sketch represents a very crowded Manchester thoroughfare on a clear day as it appears at the time of writing. Nothing is visible except an occasional dark shadow. The one shown in the sketch represents a man who has passed near enough to tread on the patient's toes. None of the road traffic can be seen at all. (Fig. 2.)

During the past few weeks, in addition to a chronic stickiness of the eyelids, a kind of paralysis of the nose, the lips, and the chin has set in, making speech occasionally quivering. There has also been periodical numbness of the forehead. It may be mentioned that when in Glasgow the patient attended the Ophthalmic Institute and was seen by Professor A. Maitland Ramsay who confirmed all that Dr. Glascott had said, calling the disease, however, by a different name—"grey atrophy."

Permanent optical illusion.—In the advanced state of the disease the only thing capable of being visually appreciated with anything like correctness was a large blot of ink on white paper held close to the eye. The patient finds it a great relief to keep the lids closed as much as possible, but

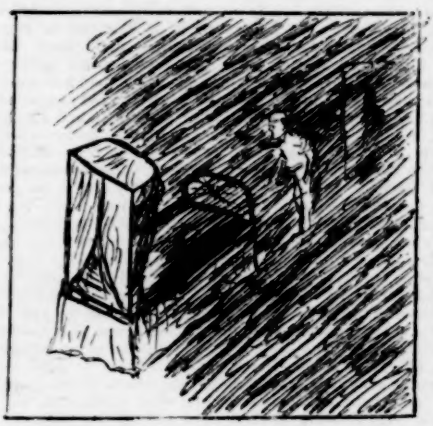
he finds that when opening them suddenly at times when his mind is not specially occupied all kinds of fantastic designs in black and white appear before the eye, as if he was looking through a kaleidoscope, and remain for a few seconds and gradually fade away. The figures shown are often of familiar animals, fleur-de-lis, black

FIG. 2.

Market-street, Manchester, is here shown. The patient's son, who leads him, remarks that the street is more than usually crowded. So far as his (the patient's) eyes tell him, however, it presents a deserted appearance, as in this sketch.

battlements, &c., and are always mixed up with a section of a "chess-board." A wall-paper designer might get some profit from glaucoma. On waking from sleep objects appear visible about which the patient has not recently thought or dreamt though they were once much in his mind. A woman's costume fixed on a wire stand has more than once

FIG. 3.

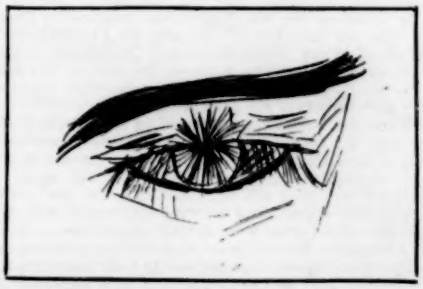


The patient is lying in the bed shown. The figure standing at the foot is a sudden apparition of himself when 20 years younger.

appeared in this way and has only very gradually vanished. A most peculiar instance, however, is illustrated below. The patient being awakened by his wife bringing up a cup of tea is conscious before receiving the cup that the space between the door and the bed is occupied by the apparition of himself as he looked 20 years ago—dressed in cricketing flannels, necktie flying in the wind, the face being flushed and indicating the joy of life. This apparition continued visible some time after he had received the cup of tea and had informed his wife of what he saw. (Fig. 3.)

The gummy feeling of the eyelids to which reference has been made may be slightly relieved by bathing with warm water and is an annoyance worth bearing patiently. But a trick played by the eye, as shown in the following sketch (Fig. 4), seems to go a little too far towards the region of

FIG. 4.



Wheel appearance caused by the eyelashes.

insult. The patient's eyelashes now and then seem to form themselves into a kind of wheel which will revolve with considerable speed for several seconds, the lashes being magnified to about three times their right size.

The medical dictionaries and handbooks on eye diseases give very scanty accounts of glaucoma, but it seems to be looked upon as incurable by oculists of great experience. Again and again, always in kind and sympathetic tones, comes the same best possible advice: "Your case is hopeless; keep up your spirits and general health." He who has done all things well does for the asking give a man power to see the cheerful and even humorous side of blindness. Still, the particular joys of glaucoma are not always apparent and the sympathetic paralysis with which it is accompanied is sympathy not easily appreciated.

MEDICAL GRADUATES' COLLEGE AND POLYCLINIC.

ANNUAL GENERAL MEETING.

SIR WILLIAM H. BROADBENT, Bart., presided on March 25th over the third annual general meeting of the members and subscribers of the Medical Graduates' College and Polyclinic at 22, Chenies-street, London.

The third annual report of the council began by pointing out that the fact that new names were added almost daily to the register showed that the Polyclinic filled a long felt want. Many of the members had frequently availed themselves of the opportunity afforded them for obtaining an expert opinion upon cases of unusual rarity or of peculiar interest. The recommendations of members who had attended practical classes had resulted in the attendances being considerably augmented. The number of members and subscribers for 1901 was 825. Most interesting discussions had taken place at meetings of the special committees dealing with leprosy, yaws, climatology, and tuberculosis and much useful information had been brought forward. It was announced that there were in course of constitution two new special committees for the investigation of cancer and vaccination. In October, 1900, short courses of lectures on special subjects were inaugurated and the arrangement worked so well that for the year 1901 the number had been doubled. The scale of charges for the practical classes had been revised and the change had been much appreciated by the members. The vacation session of three weeks held in September proved a great success. The determination had therefore been arrived at to hold a similar course again. Arrangements had been completed whereby members could obtain instruction in operative surgery. The council felt assured that in the course of time the consultation department would constitute a very special and much-utilised feature of the college work. The report contained a table showing the nature of the investigations which had been conducted in the laboratory during the past year and

contained a scale of charges for examinations of pathological specimens. In the past year 150 clinical investigations had been carried out. The museum was open all day to members and was much resorted to for private study. The following institutions were open to the members for clinical work: the Evelina Hospital for Children, the Dreadnought Hospital, Greenwich, the North-West London Hospital, the Hospital for Diseases of the Throat, Golden-square, the Westminster Ophthalmic Hospital, the North London Hospital for Consumption, the Blackfriars Hospital for Diseases of the Skin, the East London Hospital for Children, and the Victoria and Albert Docks Hospital. The report concluded with the expression of the hope on the part of the council that the results obtained justified the support of the institution by all members of the profession.

Sir WILLIAM BROADBENT, in moving the adoption of the report and the balance-sheet, said that they were entitled to support from the public. Personally he regretted that they were so dependent, but their income did not equal their expenditure and they not only had to go to the public to replace capital expenditure but they still had to rely on that support for some part of their annual expenditure.

Mr. JONATHAN HUTCHINSON said that large donations had been given to several institutions and he submitted that the Polyclinic had an equal claim to such benefits. They had formed a committee to study cancer and he had not the least hesitation in saying that money could not be devoted to a more charitable purpose and with greater certainty of producing good results than by its being given to the Polyclinic.

Dr. C. THEODORE WILLIAMS spoke on the financial condition of the college and took a hopeful view of the position of affairs.

Dr. C. O. HAWTHORNE drew the attention of the council to the fact that it would be well if members of the council would also make themselves members of the college.

The report and balance-sheet having been duly passed, Dr. GUTHRIE RANKIN proposed, and Dr. R. PURDIE seconded, the following gentlemen as members for election on the council:—Dr. T. B. Crosby, Mr. D. Dallaway, Mr. Reginald Harrison, Mr. E. Jessop, and Dr. H. Tilley.

A protracted discussion arose as to the right of members to nominate other names for election than those submitted by the council. Finally Mr. C. G. D. MORIER proposed, and Dr. L. WILLIAMS seconded, the name of Mr. T. J. Hitchins as a candidate for the council.

The following was the result of the ballot for the five vacancies:—Dr. Crosby, 16; Mr. Harrison, 16; Dr. Tilley, 15; Mr. Jessop, 13; Mr. Hitchins, 11; and Mr. Dallaway, 9

A vote of thanks to Sir William Broadbent for presiding was proposed by Mr. JAMES CANTLIE and seconded by Mr. HITCHINS. This was duly acknowledged and the meeting ended.

THE METROPOLITAN WATER-SUPPLY.

VI.[1]

THE WEST MIDDLESEX WATERWORKS COMPANY.

THE West Middlesex Waterworks were projected at the early years of the last century to supply a part of the West End of London, which was at the time being rapidly "developed," and was without an adequate supply of water. The first Act obtained by the company authorised it to supply Marylebone and certain parishes and places as well as "parts adjacent." The Select Vestry of Marylebone objected to the pavements being taken up for laying the pipes, but in the year 1810 the objection was overcome by the action of Parliament and an Act was passed which increased the authorised area of supply and this rendered impossible any further interference on the part of the vestry. The earliest Acts obtained by the company were 46 Geo. III., c. 119, 50 Geo. III., c. 32, and 53 Geo. III., c. 159, and these were the only Acts obtained by the company before the year 1850.[2] At the middle of the last century the water used by the company was abstracted from the Thames at Barnes and passed into two subsiding reservoirs which covered an area of about 16 acres; these reservoirs were partially supplied also by water which came through the gravelly beds of the district. From the reservoirs the water passed through an iron pipe across the bed of the Thames to the Middlesex side and was pumped to the customers. None of the water was filtered. There were service reservoirs at Kensington and at Barrow-hill, and a supply was given in all cases three times a week "and more frequently in parts of the district where it was required." In July, 1855, water was first supplied from Hampton, where a new station had been erected. At this date the Barnes reservoirs were capable of holding a six days' supply and filter-beds, three in number and having an area of one and a half acres, had been constructed at Barnes. The company then proposed to abandon the service reservoir at Kensington "in order to save the cost of covering it,"[3] for it was situated within the five-mile radius and therefore under the Metropolis Water Act, 1852, it was necessary that it should be covered or abolished. The reservoir at Barrow-hill, Regent's-park was covered and it served to supply the higher parts of the district, the lower parts being supplied directly from the distributing mains. The average quantity of water distributed daily was something between 6,000,000 and 7,000,000 gallons; the number of tenements supplied was 25,732 and the water was furnished "to all parts of the district daily, Sundays excepted, and in some parts twice a day."[4]

The authorised area of supply possessed by the West Middlesex Company is a very large one and includes Barnes, Battersea, Bloomsbury, Brentford, Hanwell, Heston, Kew, Mortlake, the Strand, St. Clement Danes, and St. Paul's Covent Garden. According to the statement presented to Lord Llandaff's Commission which was put in at the fifty-second sitting[5] the districts actually in the County of London supplied are the whole of Willesden, parts of Chelsea, Fulham, Hammersmith, Kensington, Paddington, St. Anne's Soho, St. Marylebone, St. Pancras, St. James Westminster, St. John Hampstead, St. Margaret Westminster; in the county of Middlesex, Acton, Chiswick, Ealing, and Hendon. The companies which supply districts within the authorised area of the West Middlesex Company are the Chelsea, the Grand Junction, the New River, the Lambeth, the Southwark and Vauxhall, and the Colne Valley.[6]

The present arrangements for carrying on the business of the company are briefly as follows. Water is abstracted from the Thames at Hampton, it is pumped to storage and subsidence reservoirs at Barnes and Barn Elms, and filtered at Barnes. It is then conveyed under the Thames to Hammersmith whence it is pumped into the districts supplied, and to service reservoirs situated at Campden-hill (Kensington), Barrow-hill (Regent's-park), and Finchley-road, Willesden. A supply can be sent to another reservoir which is situated at Shoot-up-hill either from Willesden or from Barrow-hill. Of late years many improvements have been made in the works of the company and it happened that the improvements were made at a time when the full statutory dividends of the company had been regularly paid for some years and the back dividends to which the shareholders were entitled had also been fully paid. This, the secretary of the company assured Lord Llandaff, was a coincidence. It was not found necessary to charge any repairs and renewals to revenue account from the year 1879 to the year 1886 (inclusive), but it happened that from 1897 to 1899 three filter-beds were reconstructed at a cost of £21,426,[7] and during every year from 1887 to 1897 a considerable outlay was found to be requisite in improvements—e.g., a new engine, 18 new boilers, office alterations, &c. It would be interesting to know accurately if the plants of the metropolitan water companies which do not pay their full dividends have recently been as thoroughly overhauled as has the plant of the West Middlesex Company.

The most recent improvements and changes which have been effected are shown in Table I., the second column of which gives details of the state of the undertaking in December, 1901, according to the report of the Water Examiner appointed by the Local Government Board.

[1] Articles I., II., III., IV., and V. appeared in THE LANCET of March 1st (p. 614), 8th (p. 662), 15th (p. 767), 22nd (p. 842), and 29th (p. 915), 1902, respectively.

[2] General Board of Health. Reports to the Right Hon. William Cowper, M.P., President of the General Board of Health, on the Metropolis Water-supply under the provisions of the Metropolis Water Act, London, 1856.

[3] Op. cit., p. 43.

[4] Op. cit., p. 44.

[5] Feb. 14th, 1899.

[6] Minutes of Proceedings taken before the Royal Commission on London Water-supply, p. 3487. Dyson and Co.

[7] Op. cit., pp. 3488-89.

TABLE I.—*Showing the Nature and Amount of the Chief Changes effected between December, 1896, and December, 1901.*

—		For the year 1895.	In December, 1901.
Supply	Number of houses supplied	79,644	87,937
	Percentage of houses on constant supply ...	70	100
	Estimated population	584,506	650,734
Reservoirs, subsiding and storage for unfiltered water...	Available capacity in gallons	117,500,000	397,500,000
Filters	Number of beds...	—	18
	Area in acres ...	15	22½

In spite of the alterations and improvements which have been effected the water supplied by the West Middlesex Company compares unfavourably with that distributed by the New River Company and the Kent Company. This fact will be seen readily by a study of Table II. which shows the results of analysis of the water supplied by these companies during every month of the year 1901 and during the month of January, 1902. It is much to be regretted that a larger number of complete analyses are not available, but the constant superiority of the water supplied by the deep wells of the Kent Company is beyond doubt.

TABLE II.—*Showing the Results of Analysis expressed in Parts per 100,000 of Organic Carbon and of Organic Nitrogen in the Water supplied by the West Middlesex Waterworks Company, the New River Company, and the Kent Company in each Month of the Year 1901 and in the Month of January, 1902. (Compiled from the Reports of the Results of Analysis made by Dr. T. E. Thorpe, F.R.S., on behalf of the Local Government Board.)*

Year and month.	Organic carbon, expressed in parts per 100,000.			Organic nitrogen, expressed in parts per 100,000.		
	West Middlesex Company.	New River Company.	Kent Company.	West Middlesex Company.	New River Company.	Kent Company.
1901.						
January	0·222	0·070	0·039	0·029	0·010	0·008
February	0·254	0·073	0·044	0·030	0·012	0·010
March	0·238	0·141	0·043	0·024	0·013	0·010
April	0·227	0·124	0·043	0·021	0·012	0·008
May	0·200	0·081	0·042	0·021	0·013	0·006
June	0·144	0·068	0·036	0·017	0·009	0·007
July	0·124	0·062	0·058	0·012	0·010	0·012
August	0·121	0·049	0·038	0·017	0·007	0·005
September	0·136	0·115	0·037	0·015	0·013	0·009
October	0·132	0·046	0·058	0·019	0·010	0·007
November	0·148	0·070	0·055	0·017	0·009	0·009
December	0·130	0·093	0·048	0·013	0·009	0·006
1902.						
January	0·214	0·077	0·059	0·023	0·008	0·006

At the present time, however, the customers of the West Middlesex Company are in many respects at a great advantage compared with those of some of the other companies. The water rents charged are not high. The arrangements for the distribution of water are superior to those of many of the other businesses. The shareholders of the company now receive their full dividends and any increase in the profits of the company becomes practically the property of the water consumers. For their protection, therefore, all that they require is control over the company's financial affairs. This was advocated by Lord Avebury before the Llandaff Commission.

A question which the water consumers should be allowed to decide is whether their profits should be spent in improvements or for the lessening of the water rent. If they were wise they would prefer the former course.

Looking Back.[1]

FROM

THE LANCET, *SATURDAY, APRIL* 3, 1824.

Extraordinary Case of Loss of the faculty of Speech, successfully treated by FREDERICK BASSET, *Esq. Member of the Royal College of Surgeons in London.*

To the Editor of The Lancet.

SIR,—On Thursday the 5th of this month[2] I was requested to see a young lady, eighteen years of age, and a full plethoric habit of body, who had lost her voice in June last; upon enquiry I found, that at that time, from excessive grief and anxiety, she had had a paralytic stroke, which deprived her for some hours of the use of her right side; a medical gentleman was sent for, who attended her for some time, and restored to her the use of her limbs, but not of the organs of speech. She was then removed into the country, where also she was regularly attended by a professional man, and Dr. BABINGTON, there also saw her, and decided the case to be a complete paralysis of the tongue, and I believe was the one who advised galvanism, which was several times performed by MR. LABANMA of Southampton Street, without producing any beneficial effect. It was some time subsequent to this that I saw the patient, and upon examination found Dr. BABINGTON'S opinion of the disease perfectly correct, and that the paralysis extended to the muscles of the larynx. The tongue was drawn to the posterior part of the mouth, appeared very white, and with a very feeble circulation through it, quite insensible to the prick of a needle, and perfectly immovable.

I ordered a mustard poultice to be applied to her throat every night, to inhale the steam arising from boiling water, having some flour of mustard in it*; to take one pill composed of extract. colocynth. c. gr. v. & hyd. submur. gr. j. every other night, and to gargle the throat and mouth with the following mixture, five or six times a day:

℞ Infus. sinapis, ℥ viij.
Tinctur. capsici
——— Myrrhæ aa ℥ j. ft. gargar.

She began this treatment on the day following (Friday) and I saw her again on the Monday after. She was the same, except the tongue looked a little more vascular. I altered the gargle as regards the infus. sinapis to the infus. armoraciæ compos.* and desired her to continue the same plan with this exception. On the next Thursday I again visited her, when I found the tongue much more red, and appeared to have every now and then a tremulous motion. I ordered her to continue as before, and on the following Monday, when I called, was both surprised and delighted to be accosted by her with "Good morning to you." Upon requesting to know when and how this change took place, I was informed that on the morning after I saw her, she awoke and found her tongue hanging out of her mouth, upon rubbing it she felt it give her pain, and upon attempting to speak, found she was capable of doing so nearly as well as before the attack.

This young lady is now perfectly well, and articulates better than ever, having lost an impediment which had existed from her infancy.

FREDERICK BASSET.

* Four or five times in the course of the day.

* I forgot to mention I ordered her some lozenges, made as subscribed, and to dissolve four or five in her mouth in the course of the day—

℞ Pulv. capsici, ʒ iij.
Zingiberis ʒ ij.
G. Acaciæ ʒ ij.
Sacchari ℥ i et
Esprit de Rose ʒ j.
fiant Troches lx.

[1] It will be noted that the day of publication is now changed from Sunday to Saturday.—ED. L.

[2] Probably Thursday, March 4th, 1824.

VITAL STATISTICS.

HEALTH OF ENGLISH TOWNS.

IN 76 of the largest English towns 8849 births and 5015 deaths were registered during the week ending March 22nd. The annual rate of mortality in these towns, which had been 23·3, 20·5, and 19·6 per 1000 in the three preceding weeks, further declined in the week to 17·6 per 1000. In London the death-rate was equal to 18·8 per 1000, while it averaged 17·1 per 1000 in the 75 other large towns. The lowest death-rates in these towns were 7·5 in Handsworth, 9·2 in Ipswich, 9·7 in Hornsey and in Grimsby, 9·8 in Barrow-in-Furness, 10·0 in Aston Manor, and 10·4 in West Hartlepool; the highest rates were 21·1 in Sunderland, 22·1 in Stockport, 22·9 in West Bromwich, 23·0 in Rochdale, 25·1 in Merthyr Tydfil, 27·0 in Devonport, and 29·7 in Burnley. The 5015 deaths in these towns in the week included 553 which were referred to the principal zymotic diseases, against 571, 601, and 617 in the three preceding weeks; of these 553 deaths 149 resulted from measles, 116 from whooping-cough, 93 from diphtheria, 68 from small-pox, 50 from scarlet fever, 46 from diarrhœa, and 31 from "fever" (principally enteric). No death from any of these diseases was registered in the week in Hornsey, Bournemouth, Ipswich, Norwich, Handsworth, Wigan, or Tynemouth; while they caused the highest death-rates in Willesden, West Ham, Walsall, Smethwick, Burnley, Blackburn, York, and South Shields. The greatest proportional mortality from measles occurred in Willesden, Northampton, Great Yarmouth, Grimsby, Warrington, Burnley, Rotherham, and York; from scarlet fever in Reading, Burton-on-Trent, and Burnley; from diphtheria in West Ham, West Bromwich, Salford, and Blackburn; from whooping-cough in Aston Manor, Liverpool, Middlesbrough, and South Shields; from "fever" in Smethwick; and from diarrhœa in Walsall. Of the fatal cases of small-pox registered in the week, 53 belonged to London, five to West Ham, three to East Ham, three to Tottenham, two to Swansea, one to Willesden, and one to Leyton. The number of small-pox patients under treatment in the Metropolitan Asylums hospitals, which had been 1309, 1508, and 1542 at the end of the three preceding weeks, had further risen to 1567 on Saturday, March 22nd; 449 new cases were admitted during the week, against 369, 554, and 450 in the three preceding weeks. The number of scarlet fever patients in these hospitals and in the London Fever Hospital at the end of the week was 2185, against numbers decreasing from 3137 to 2206 on the 12 preceding Saturdays; 258 new cases were admitted during the week, against 215, 277, and 266 in the three preceding weeks. The deaths referred to diseases of the respiratory organs in London, which had been 733, 589, and 493 in the three preceding weeks, further declined during the week to 388, and were 83 below the corrected average. The deaths in London directly attributed to influenza, which had been 103, 89, and 67 in the three preceding weeks, further declined last week to 39. The causes of 50, or 1·0 per cent., of the deaths in the 76 large towns during the week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Bristol, Leicester, Nottingham, Salford, Leeds, and 45 other smaller towns; the largest proportions of uncertified deaths were registered in Smethwick, Liverpool, Wigan, Preston, and Halifax.

In 76 of the largest English towns 8139 births and 5175 deaths were registered during the week ending March 29th. The annual rate of mortality in these towns, which had been 20·5, 19·6, and 17·6 per 1000 in the three preceding weeks, rose again to 18·2 per 1000 last week. In London the death-rate was 18·4 per 1000, while it averaged 18·1 in the 75 other large towns. The lowest death-rates in these towns were 6·2 in Hornsey, 7·8 in Reading, 9·7 in Grimsby, 10·8 in Walthamstow, 11·3 in Burton-on-Trent, 11·7 in Bury, 12·1 in Leyton, and 12·2 in Handsworth; the highest rates were 21·3 in Manchester, 21·8 in Rhondda, 22·0 in Huddersfield, 22·1 in Stockport, 25·4 in Burnley, 26·0 in Wallsall, 26·1 in St. Helens, and 34·1 in Merthyr Tydfil. The 5175 deaths in these towns included 602 which were referred to the principal zymotic diseases, against 601, 617, and 553 in the three preceding weeks; of these 602 deaths 157 resulted from whooping-cough, 145 from measles, 93 from diphtheria, 68 from small-pox, 52 from scarlet fever, 49 from diarrhœa, and 38 from "fever" (principally enteric). No death from any of these diseases was registered last week in Hornsey, Bournemouth, Ipswich, Great Yarmouth, Devonport, Coventry, Derby, West Hartlepool, or Tynemouth; while the highest zymotic death-rates were recorded in Willesden, Bootle, St. Helens, Burnley, Blackburn, Barrow-in-Furness, Stockton-on-Tees, and Merthyr Tydfil. The greatest proportional mortality from measles occurred in St. Helens, Burnley, Blackburn, Barrow-in-Furness, and Merthyr Tydfil; from scarlet fever in Walsall, Kings Norton, and Middlesbrough; from diphtheria in Birkenhead and Rhondda; from whooping-cough in Leyton, Plymouth, Wallasey, Stockton-on-Tees, and South Shields; and from "fever" in Northampton and Bootle. 68 fatal cases of small-pox were registered last week among persons belonging to the 76 large towns; of these, 61 belonged to London, two to Tottenham, two to West Ham, and one each to Croydon, Leyton, and Liverpool. There were 1526 cases of small-pox under treatment in the Metropolitan Asylums hospitals on Saturday, March 29th, against 1508, 1542, and 1567 at the end of the three preceding weeks; 389 new cases were admitted during the week, against 554, 450, and 449 in the three preceding weeks. The number of scarlet fever patients in these hospitals and in the London Fever Hospital, which had decreased from 3137 to 2185 on the 13 preceding Saturdays, had further declined to 2147 at the end of last week; 250 new cases were admitted during the week, against 277, 266, and 258 in the three preceding weeks. The deaths referred to diseases of the respiratory organs in London, which had been 589, 498, and 388 in the three preceding weeks, further declined last week to 360 and were 60 below the corrected average number. The causes of 63, or 1·2 per cent., of the deaths in the 76 large towns last week were not certified either by a registered medical practitioner or by a coroner. All the causes of death were duly certified in West Ham, Bristol, Manchester, Newcastle, and in 44 other smaller towns; the largest proportions of uncertified deaths were registered in Birmingham, Coventry, Wigan, Warrington, Barrow-in-Furness, Halifax, and Tynemouth.

HEALTH OF SCOTCH TOWNS.

The annual rate of mortality in the eight Scotch towns, which had been 25·4 and 23·6 per 1000 in the two preceding weeks, rose again to 23·7 per 1000 during the week ending March 22nd, and exceeded by 6·1 per 1000 the mean rate during the same period in the 76 large English towns. The rates in the eight Scotch towns ranged from 12·5 in Perth and 18·2 in Greenock to 25·8 in Aberdeen and 26·3 in Paisley. The 767 deaths in these towns included 28 which were referred to whooping-cough, 25 to diarrhœa, 11 to measles, six to small-pox, five to scarlet fever, four to diphtheria, and four to "fever." In all 83 deaths resulted from these principal zymotic diseases during the week, against 69 and 85 in the two preceding weeks. These 83 deaths were equal to an annual rate of 2·6 per 1000, which was 0·7 per 1000 above the mean rate from the same diseases in the 76 large English towns. The fatal cases of whooping-cough, which had been 20 and 23 in the two preceding weeks, further rose again in the week to 28, of which 15 occurred in Glasgow, four in Edinburgh, four in Aberdeen, three in Dundee, and two in Paisley. The deaths from diarrhœa, which had been 13, 17, and 23 in the three preceding weeks, further increased to 25 during the week, and included 12 in Glasgow, five in Dundee, four in Aberdeen, and two in Leith. The fatal cases of measles, which had been 14 in each of the two preceding weeks, declined in the week to 11, of which six were registered in Glasgow and two in Dundee. The deaths from small-pox, which had been 10, two, and seven in the three preceding weeks, decreased again to six and were all recorded in Glasgow. The fatal cases of scarlet fever, which had been seven and eight in the two preceding weeks, declined in the week to five, of which three were registered in Greenock. The deaths from diphtheria, which had been seven and six in the two preceding weeks, further declined to four in the week and included two in Edinburgh and two in Dundee. The four fatal cases of "fever" corresponded with the number in the preceding week and included two in Glasgow. The deaths referred to diseases of the respiratory organs in these towns, which had been 230 and 189 in the two preceding weeks, rose again to 217 and were 91 in excess of the number in the corresponding period of last year. The causes of 30, or nearly

4 per cent., of the deaths in these eight towns were not certified.

The annual rate of mortality in eight of the principal Scotch towns, which had been 23·6 and 23·7 per 1000 in the two preceding weeks, declined again to 20·3 per 1000 during the week ending March 29th, but exceeded by 2·1 per 1000 the mean rate during the same period in the 76 large English towns. Among these Scotch towns the death-rates ranged from 12·1 in Edinburgh and 14·1 in Perth to 25·8 in Leith and 28 4 in Aberdeen. The 655 deaths in these towns included 22 which resulted from diarrhœa, 14 from measles, 13 from whooping-cough, six from diphtheria, three from scarlet fever, and one from "fever." In all 59 deaths resulted from these principal zymotic diseases last week against 85 and 83 in the two preceding weeks. These 59 deaths were equal to an annual rate of 1·8 per 1000, which was 0·3 above the mean rate last week from the same diseases in the 76 large English towns. The fatal cases of diarrhœa, which had been 17, 23, and 25 in the three preceding weeks, declined again last week to 22, of which 11 occurred in Glasgow, three in Paisley, two in Dundee, two in Leith, and two in Greenock. The deaths from measles, which had decreased from 19 to 11 in the four preceding weeks, rose again to 14 last week, and included 12 in Glasgow. The fatal cases of whooping-cough, which had been 20, 23, and 28 in the three preceding weeks, declined again last week to 13, of which six were registered in Glasgow, four in Aberdeen, and two in Leith. The deaths from diphtheria, which had been seven, six, and four in the three preceding weeks, rose again to six last week, and included four in Glasgow, where two of the three fatal cases of scarlet fever were also recorded. The deaths referred to diseases of the respiratory organs in these towns, which had been 230, 189, and 217 in the three preceding weeks, declined again last week to 173, but were 46 in excess of the number in the corresponding period of last year. The causes of 22, or more than 3 per cent., of the deaths in these eight towns last week were not certified.

HEALTH OF DUBLIN.

The death-rate in Dublin, which had been 29·7 and 20·6 per 1000 in the two preceding weeks, rose again to 22·4 per 1000 during the week ending March 22nd. During the previous four weeks the death-rate has averaged 25 3 per 1000, the rates during the same period being 23·4 in London and 25·0 in Edinburgh. The 163 deaths of persons belonging to Dublin registered during the week under notice showed an increase of 13 over the number in the preceding week, and included six which were referred to the principal zymotic diseases, against 13 and eight in the two preceding weeks; of these, one was referred to each of the seven principal zymotic diseases, except small-pox. These six deaths were equal to an annual rate of 0·1 per 1000, the zymotic death-rates during the same period being 2·4 in London and 1·1 in Edinburgh. The mortality from measles and from scarlet fever was less than that recorded in the preceding week, while that from "fever" and from diarrhœa showed no variation. The 163 deaths in Dublin during the week included 25 of children under one year of age and 33 of persons aged upwards of 60 years; the deaths of infants showed a slight excess over the number in the preceding week, while those of elderly persons slightly declined. Five inquest cases and eight deaths from violence were registered; and 68, or more than one-third, of the deaths occurred in public institutions. The causes of eight, or nearly 5 per cent., of the deaths in Dublin were not certified.

The death-rate in Dublin, which had been 20·6 and 22·4 per 1000 in the two preceding weeks, further rose to 27·5 per 1000 during the week ending March 29th. During the 13 weeks of the quarter ending on that date the death-rate averaged 25·6 per 1000, the rates during the same period being 21·8 in London and 20·7 in Edinburgh. The 200 deaths of persons belonging to Dublin registered during the week under notice were 37 in excess of the number in the preceding week, and included seven which were referred to the principal zymotic diseases, against 13, eight, and six in the three preceding weeks; of these, two resulted from scarlet fever, two from whooping-cough, two from "fever," and one from measles. These seven deaths were equal to an annual rate of 1·0 per 1000, the zymotic death-rates during the same period being 2·6 in London and 0·2 in Edinburgh. The mortality from measles corresponded with that recorded in the preceding week, while that from scarlet fever, whooping cough, and "fever," showed in each case a slight excess. The 200 deaths in Dublin last week included 30 of children under one year of age and 49 of persons aged upwards of 60 years; the deaths of infants and of elderly persons were respectively five and 16 above the numbers registered in the preceding week. Two inquest cases and one death from violence were reported, and 89, or nearly 45 per cent., of the deaths occurred in public institutions. The causes of 12, or 6 per cent., of the deaths registered in Dublin last week were not certified.

THE SERVICES.

ROYAL NAVY MEDICAL SERVICE.

Fleet Surgeon Robert William Anderson has been placed on the retired list of his rank. Dated Feb. 20th, 1902. Fleet Surgeon John Acheson has been placed on the retired list of his rank. Dated March 19th, 1902.

IMPERIAL YEOMANRY.

The undermentioned officers resign their commissions and receive new commissions subject to the provisions of the Militia and Yeomanry Act, 1901, each retaining his present rank and seniority.

Berks: Surgeon-Captain J. H. Waters. Royal 1st Devon: Surgeon-Lieutenant M. B. Steuart. Gloucestershire (Royal Gloucestershire Hussars): Surgeon-Captain H. Bramwell. Lancashire Hussars: Surgeon-Major D. Harrisson. Middlesex (Duke of Cambridge's Hussars) Supernumerary Surgeon-Captain (Honorary Major in the Army) C. Stonham, C.M.G. Northumberland (Hussars): Surgeon-Captain A. Brumell. Pembroke: Surgeon-Lieutenant-Colonel G. R. T. Phillips and Surgeon-Lieutenant J. Wilson. Shropshire: Surgeon-Lieutenant-Colonel J. D. Lloyd. West Somerset: Surgeon-Lieutenant-Colonel S. Farrant. Royal Wiltshire (Prince of Wales's Own Royal Regiment): Surgeon-Captain O. C. Maurice.

VOLUNTEER CORPS.

Royal Garrison Artillery (Volunteers):—Surgeon-Lieutenant D. L. Anderson resigns his commission. 3rd Middlesex: Charles Gordon Watson to be Surgeon-Lieutenant. *Rifle:* 3rd Volunteer Battalion the Norfolk Regiment: Surgeon-Captain C. R. Whitfy to be Surgeon-Major; Surgeon-Lieutenant G. B. Masson to be Surgeon-Captain. 1st Volunteer Battalion the Duke of Cambridge's Own (Middlesex Regiment): The undermentioned Surgeon-Lieutenants to be Surgeon-Captains: W. N. Evans and G. A. Cohen. 2nd Volunteer Battalion the Manchester Regiment: Charles Christopher Heywood to be Surgeon-Lieutenant. 2nd Volunteer Battalion the Durham Light Infantry: William Murray Mackay to be Surgeon-Lieutenant.

ROYAL ARMY MEDICAL CORPS (VOLUNTEERS).

The Woolwich Companies: Surgeon-Lieutenant-Colonel William Collingridge, late Militia Medical Staff Corps, to be Honorary Colonel.

VOLUNTEER INFANTRY BRIGADE.

Leicester and Lincoln: Surgeon-Lieutenant-Colonel R. B. Smith, 1st Volunteer Battalion the Leicestershire Regiment, to be Brigade-Surgeon-Lieutenant-Colonel whilst holding the appointment of Senior Medical Officer to the Brigade. Sussex and Kent: Surgeon-Lieutenant-Colonel T. Joyce, 2nd (the Weald of Kent) Volunteer Battalion the Buffs (East Kent Regiment), to be Brigade-Surgeon-Lieutenant-Colonel whilst holding the appointment of Senior Medical Officer to the Brigade.

INDIA AND THE INDIAN MEDICAL SERVICES.

The King has approved of the following promotions among officers of the Indian Medical Service made by the Government of India:—To be Surgeon-General: Colonel Benjamin Franklin, K.H.P., C.I.E., Bengal Establishment.

The King has also approved of the retirement from the service of the under-mentioned officers: Lieutenant-Colonel William Owen, C.M.G., C.I.E., Bengal Establishment; and Lieutenant-Colonel Augustus Napoleon Rogers-Harrison, Madras Establishment.

SOUTH AFRICAN WAR NOTES.

Lieutenant-Colonel R. Jennings, R.A.M.C., Major C. G. Woods, R.A.M.C., Lieutenant J. F. Whelan, R.A.M.C.,

and Civil Surgeons Summerhayes, Cavanagh, and Hogg are on passage home.

ARMY MEDICAL SCHOOL, NETLEY.

The eighty-fourth session of the Army Medical School was opened on April 1st. The classes are attended by 37 surgeons-on-probation for His Majesty's Indian Medical Service. 33 of these gentlemen have entered the school by competing at the examination recently held, and four of them by the nomination of the Secretary of State for India. The nominees are medical men who have served on plague duty in India. The following is a list of these gentlemen:—

F. A. F. Barnardo.	L. Cook.
J. McPherson.	J. Forrest.
W. C. Ross.	L. B. Scott.
J. C. G. Kunahardt.	J. H. Ferris.
G. D. Franklin.	W. S. Patton.
J. H. Gill.	N. W. Mackworth.
R. A. Lloyd.	W. L. Trafford.
C. A. Gourlay.	L. Rundall.
E. A. Walker.	E. C. C. Maunsell.
F. Sime.	G. C. J. Robertson.
L. L. Hirsch.	D. S. A. O'Keefe.
H. Ross.	J. W. Illius.
H. E. J. Batty.	W. C. B. Smith.
G. J. Davys.	J. P. Cameron.
A. J. V. Betts.	H. Gloster.
H. Halliday.	J. H. Horton.
F. E. Wilson.	W. A. Justice.
B. B. Paymaster.	H. H. G. Knapp.
H. Crosse.	

THE LOSS OF THE SLOOP "CONDOR."

The loss of the sloop *Condor* and her crew having now been officially recognised, we regret to record the death of Surgeon T. S. Hartley, R.N., M.R.C.S., L.R.C.P. Lond., who was medical officer on board that ill-fated vessel.

QUEEN ALEXANDRA'S IMPERIAL NURSING SERVICE.

A Royal Warrant has been issued providing for the establishment of an Imperial Military Nursing Service to be designated "Queen Alexandra's Imperial Nursing Service," and notifying the amendments in the Regulations contained in the Royal Warrant of the late Queen, dated Oct. 26th, 1900. It has been framed, as anticipated, very much on the lines with which our readers are already acquainted.[1]

Correspondence.

"Audi alteram partem."

THE PROSPECTS OF THE GENERAL HOSPITALS OF LONDON IN THE PRESENT CENTURY.

To the Editors of THE LANCET.

SIRS,—There is no doubt that before many years of this twentieth century are past the very serious question of adequate hospital accommodation for the poor of London will be forced once more upon the public. During the last 50 years vast changes have been taking place in the residential quarters of the poor, and now, on the eve of improved methods and greater facilities for the rapid transmission of the public between the centre and various points on the circumference of the great city, even greater changes must follow, for it is becoming obvious that the whole of central London must be given up to the requirements of professions and trades and there will soon be no space in this region for the residences of the poor. It may be as well if I define what is meant by the term "the poor." Firstly, there is the very large group of those who have no regular employment and who pick up a livelihood by odd jobs, both honest and dishonest. The greater number of these were herded together until recently in three or four "slum neighbourhoods" in the West Central district. One such area existed on the site of the present law courts; another (Clare Market) is now being demolished; another, round Endell-street, has almost ceased to exist; and the same may be said of that one which exists on each side of Theobalds-road. These people have migrated chiefly to the north of King's Cross and to the Surrey side of the river, many having gone as far as Islington and Holloway. Secondly, there is a group of those who are out of work for the time being; they are the most difficult from the hospital point of view, for when in work they are often well able to pay a medical man and when out of work are practically destitute, for they never save money when they are in regular employment. It is these people who often abuse the hospitals most, for they come first when nearly destitute and go on attending when they could well afford to pay a medical man. Thirdly, there is the class of people who can afford private medical and surgical advice for small things, but are, nevertheless, proper cases for hospitals when they have any serious or long illness. This class often includes many people who are obliged to appear decently dressed and have to expend money on travelling to and from their work.

While, therefore, the poor have been steadily forced, and will be still more forced, from these central parts our great general hospitals have, without exception, remained where they were. The almost certain result must be that in a few years the poor who seek relief as in- or out-patients will have to travel from the circumference to the centre of the city before they can obtain it. It may be said that just as the facilities for cheap and rapid travelling become extended, so the journeys of the sick poor to the great hospitals will at the same time be shortened; but is this by any means a desirable state of affairs? Should not the sick poor be able to obtain relief near where they are living? I think there are few, whether they be committee men or professional men, belonging to the great general hospitals who would not admit that those seeking medical or surgical help ought, on all grounds, to be able to obtain it close at hand. Such being the case, there are only two alternatives: (1) to transfer our great general hospitals further away from the central regions of London; or (2) to build new general hospitals at the circumference. In the former case of course provision would have to be made for "emergency cases" occurring in the central regions of London by the erection of suitable receiving rooms and wards. There is also a possibility that some of the larger hospitals might join with some of the smaller general hospitals which now exist on the circumference of the great city—four or five miles from Charing Cross-road.

It may be urged that in the case of some of those hospitals within one and a half miles of Cambridge-circus the wards are kept well filled and the number of out-patients is still large, but what are the proportions of the patients coming from the immediate neighbourhood of these hospitals to those coming from a distance, and, in many cases, sent up from the country and elsewhere in order that they may be under the care of certain members of the staff? I may safely assert that in the case of more than one of these hospitals the material for teaching would be quite inadequate were it not supplemented by cases coming in, or sent up, from a distance. Moreover, how many in-patients are there—mentioning surgical tuberculous cases alone—who are often kept in the wards for weeks because it is not possible to obtain sufficient orders for convalescent homes for them? How much better off would such cases be were they treated in a hospital in the outskirts, rather than in the centre of London.

From the point of view of relieving the sick poor the ideal plan would be to demolish many of the large hospitals now in the central districts of London and to rebuild them in the outlying districts to which the poor are now rapidly migrating. In many cases the money obtained from the sale of the extremely valuable land upon which these hospitals now stand would be nearly sufficient to pay for their erection elsewhere; then each hospital would be obliged to erect a small and compact casualty and out-patient department, together with wards for, say, 100 beds, close to its old site. Here urgent cases would be dealt with until fit for removal to the outlying hospital. This would entail the provision of horsed or motor ambulances such as are at present in use by the hospitals of the Metropolitan Asylums Board. When we consider how smoothly that system of conveying fever cases between their homes and the hospitals now works, and how extensively it is adopted, there can be no objection raised to its adoption in the case of other institutions. At the Pendlebury Children's Hospital, near Manchester, the receiving room is in Manchester itself, and this system has been at work for some years.

This brings me to the subject of Poor-law infirmaries. These institutions are acting now, to some extent, merely as receiving places for cases which the hospitals are unable to keep, owing to the continual pressure of serious cases upon

[1] Vide THE LANCET, Oct. 12th, 1901, p. 936.

their beds. Those who have worked in hospitals well know that patients who are suffering from affections which prevent them from doing work, such as severe burns, fractures, inoperable malignant disease, &c., are, after a short stay in a hospital, sent on to one of the infirmaries; in fact, it is well known that the infirmaries are obliged to take in destitute cases which the hospital resident staff do not wish to keep; in other words, the hospitals are not large enough or sufficiently numerous to do the work which they should do; the hospitals, which are supported almost entirely by voluntary contributions, are quite unable to cope with the sick poor, and the infirmaries, supported out of the rates, have to come to their aid. Now the infirmaries have nearly all migrated from the centre to the outskirts of the metropolis. They have receiving-rooms and wards in the midst of the city and large buildings on the outskirts, and they convey their patients from the one to the other just as I have suggested the hospitals will soon have to convey their patients. Surely it is time to amalgamate hospitals and infirmaries. Let us still have our hospitals each keeping to its traditions but rebuilt on a much larger scale in the outskirts of London, and let each receive a certain proportion of the rates from the district of London which it serves. Will the public withhold voluntary contributions because the hospitals have migrated and are aided by the rates? I believe that the public will support them more freely than is the case now when it is realised that their scope has enlarged so greatly. As regards out-patients proper, it has been urged that hospitals have no right to treat those who are destitute and that these people should obtain Poor-law outdoor relief. Many of us know how very inadequate this system of relief is. How much better would it be if all these pauper cases were to receive the necessary medical and surgical treatment at our hospitals aided by the rates as here proposed?

But the matter must be looked at also from the point of view of medical education and it is here that one of the real difficulties in removing the hospitals seems to lie. In the first place, I think that it must be accepted that those who wish to receive a medical education must go to the places where the sick poor are, and not expect the poor to come to them from afar off. The same must be said of the physicians and surgeons who are attached to the hospitals and who have to teach the students. At the present time a student rarely enters the wards or out-patient department until he has passed his second examination—namely, the examination in anatomy and physiology of the university or examining board as the case may be. This being so, each hospital on the outskirts of the city would have a residential college attached to it and here the clerks, dressers, and resident staff would live. Then it would be necessary to have a resident physician and a resident surgeon who would be the two junior members of the staff or, at any rate, the two next to be elected on the honorary staff. The question of the attendance of the members of the honorary staff offers another difficulty. The out-patient staff would attend one day a week and see and demonstrate upon the cases of interest, the others being attended to by the resident officers. Then the in-patient physicians and surgeons would also each devote one afternoon a week to operating and to visiting and leave their cases very much in the hands of the senior resident physician and surgeon respectively. All this, of course, sounds impossible at the present day, but we must realise that with "tubes," light railways, and motor-cars the process of getting out of the city will be quite different from what it is now and we shall be able to get from the centre of London to its outskirts in one-fourth of the time which it is now necessary to expend. The two senior physicians and surgeons would, perhaps, be relieved from hospital work and would give clinical lectures and demonstrations in the receiving-rooms in the city only, and cases for them to lecture upon would be sent up in ambulances, horse or motor.

Perhaps the greatest difficulty of all in the realisation of such a scheme as above presented is the question of money. I would not for one moment suggest that all the hospitals should be under one controlling body or that they should all be managed in exactly the same manner. Each would still have its own committee or board and there should be that same system of rivalry as now exists in each one doing its utmost to excel. Without wholesome rivalry there can be no advance in medical and surgical art and practice. Nor would I suggest, as some have done, that the honorary staff should receive payment for their work. The work which the visiting physicians and surgeons perform in hospitals could not be adequately paid for, and, of course, partial payment is out of the question. A most strict inquiry system would have to be adopted in each hospital so as to insure that none but patients unable to pay a private medical man were admitted. I only wish that such a system were generally adopted in all the existing general hospitals. A few of them have proved that it can be done, not perfectly perhaps, but nearly so. As our general hospitals are now situated there seems no possibility of preventing the absurdly large amount of double work which is being carried on by the Poor-law infirmaries and by the hospitals, but if the latter were once removed to the outskirts of London—a few wards being kept for casualties in the city—there might be at any rate some hope of combination in the future.

I am, Sirs, yours faithfully,

PEYTON T. B. BEALE, F.R.C.S. Eng.

March 28th, 1902.

SEA-SICKNESS.

To the Editors of THE LANCET.

SIRS,—I have read with interest your notice of the Calliano belt for sea-sickness in THE LANCET of Feb. 15th, p. 459, and I am reminded that there is comparatively little published about this distressing and common complaint. During 15 years I have had experience in all sorts and conditions of boats—huge Atlantic liners and small tramp steamers, 30-knot "catchers" and torpedo-boats, and yachts of all degrees, from ocean cruisers to racing machines. On all these designs sea-sickness, like "corroding care," steps aboard and refuses to be left behind.

I do not wish to disparage the Calliano belt—it may in some cases give relief; but I cannot believe in any such mechanical contrivance as being a cure for sea-sickness, the origin of which is a disturbance of the nervous system. Vomiting is by no means its worst symptom—indeed, those who vomit early and without much effort are usually the first to recover—but there are many cases of intense vertigo and giddiness and sometimes alarming syncope where sickness is quite subordinate. In these instances patients will explain that they feel as though the whole earth was sinking away from them and then experience the terrible feeling of falling through space. A Scotsman once put it vividly to me that he would "cling mother-naked to a whin- (gorse-) bush for support."

Many inventions and much money have been brought to bear on the prevention and cure of sea-sickness, but hitherto without any enduring benefit, and unless treatment is directed to the central nervous system I do not think that any is ever likely to accrue. I take it that it is the inability of this system to adapt itself to its surroundings which is the primary cause of the complaint. Vomiting follows from reflex action on the abdominal organs, causing an excessive flow of bile, intestinal, and gastric secretions. But vomiting is only a symptom; more important though less obtrusive symptoms in arriving at the origin of the complaint are coldness of the extremities from diminished peripheral circulation and the faintness and giddiness already referred to which point to an anæmic condition of the brain. Further proof of nervous origin may be found in the effect that strong emotions have on sea-sickness. In this respect intense fear is the emotion brought into play beyond all others. The imminent danger of shipwreck has a most extraordinary effect in arousing the torpid and apparently almost lifeless sufferer to a state of energy that no known medical treatment can compete with. News of great joy it has not until recently been possible to receive at sea, but with Marconi's wireless telegraphy the prostrate passenger with miles of tossing waves still separating him from dry land may now receive a message to inform him of sudden fame or fortune and straightway leave his berth and walk the quarter-deck. Hitherto it has only been my fortune or misfortune to see the results of fear, and this, though generally imaginary, I have frequently seen to arrest suddenly the course of sea-sickness. The writer once experienced this sensation in his own person when he was not as now, from long practice, immune from the nauseating effects of rough seas. After an attack of typhoid fever he was convalescing on a steam yacht in the Mediterranean when phlebitis supervened in the right leg, followed by a blocked femoral vein and possibly external iliac too. After keeping the yacht for a month in harbour he felt so acutely the disappointment of others on board that he

insisted, against his medical attendant's advice, in making a passage to another port. It should only have been about a 12 hours' run, but when about half way to the destination it came on to blow a gale—as it can in the Mediterranean at very short notice—and the little yacht pitched and rolled to such an extent that the unhappy writer was with difficulty kept in his berth. In such weather he had always been sea-sick, but now he fully realised the danger in every movement and strain of a clot being detached and the results thereof. He knew fear as he hopes never to know it again—helpless paralysing fear with every lurch of the yacht; *he was not sick*.

I suppose a belt of any sort is presumed to be beneficial on the theory that sea-sickness is caused by movement or displacement of the viscera, but whatever relief belts may give I don't think that their action on visceral movement has much to do with it. During what we all soon hope to call the late war I saw soldiers accustomed to violent gymnastic exercises, and rough riders whose viscera get a lot of shaking up, quite as sea-sick as anyone else; and a proprietor of a circus in South Africa who takes his company all over the world informed me that his acrobats suffered quite as much at sea as ordinary humanity.

Space will not permit my opening up the wide subject of treatment, but I must say a word about boats. Every man whose business or pleasure takes him continuously backwards and forwards across oceans and seas knows exactly what boats of the lines he travels by have the reputation of being good and comfortable sea-boats; that is, boats that have an easy motion *over* rather than *through* a heavy sea, thereby lessening the shock of impact so trying to the sea-sick—boats also which do not unduly roll with that terrible interval at the extreme angle which sailors express by saying "she feels as if she was never comin' back again." Details as to the behaviour of boats at sea are not to be obtained from the clerk in the company's office from whom the passenger books his berth, and the size of a boat is not by any means a guarantee of her comfort in a sea-way. As to yachts, in their behaviour at sea they vary enormously and therefore in their capabilities of producing sea-sickness. All get their reputation, but if even doubtful they are always described to the would-be purchaser as "the finest sea-boat of her tonnage afloat," and often such a high-sounding title as *Queen of the Ocean* (I hope I am not treading on anyone's toes—I have not Lloyd's latest list) is given when she might be more appropriately christened the *Emetic*.

I am, Sirs, yours faithfully,

Parkstone, Dorset. HENRY GOODALE.

A QUESTION UNDER THE INFECTIOUS DISEASES NOTIFICATION ACT.

To the Editors of THE LANCET.

SIRS,—I received the inclosed letter from the medical officer of health of my district. I should be glad to know: 1. If a medical man must not notify according to *his* (*own*) *opinion*. 2. The fact of no bacillus being found—does this make the case certain, as the swab might be taken too late? 3. Can the district council refuse payment if the notification is sent in good faith?—I am, Sirs, yours faithfully,

Upper Pontnewydd, March 27th, 1902. A. W. HAYLES.

[INCLOSURE.]

Cwmbran, R.S.O., Monmouthshire, March 25th, 1902.

DEAR SIR,—I received a notification signed by your assistant, Dr. Wilson, on March 14th, of a case of diphtheria at Woodside-road, the child's name being Davies. I sent a swab taken from the child's throat to the Jenner Institute of Preventive Medicine for examination and the report says that there was no diphtheria bacillus found. The Llantarnam District Council direct me to write to you to say that under the circumstances you will not be entitled to charge the notification fee of 2*s*. 6*d*. Yours truly,

W. E. C. MURPHY,
Medical Officer of Health.

*** 1. The medical practitioner must act upon the basis of his own judgment.[1] There is no other standard of action contemplated or recognised by the Notification Act. Moreover, the medical officer of health has to bear in mind that the general practitioner's opinion is the only thing which enables a bacteriological examination to be made. 2. The fact that no diphtheria bacillus was found on one occasion does not, in our view, justify the extreme step which was taken in this case. The swab may have been imperfectly applied or there may have been other factors militating against a correct result. 3. We are not prepared to give a general reply to this query, but we are strongly of opinion that, assuming there to be no question of bad faith, no sanitary authority which properly comprehends its responsibilities should discourage notification in this fashion. It seems to us that the medical officer of health would have been well advised had he invited the coöperation of the notifying practitioner in securing another specimen for bacteriological examination. If the opinion of a medical practitioner is ruthlessly reduced to *nil* as the result of one negative bacteriological examination local sanitary administration will be at a rather low ebb.—ED. L.

[1] The words of the certificate are, "I hereby certify and declare that, in my opinion," &c.

CHLOROFORM ANÆSTHESIA DURING SLEEP.

To the Editors of THE LANCET.

SIRS,—In THE LANCET of March 29th, p. 911, you describe an article on Chloroform Anæsthesia during Sleep by Dr. N. Stone Scott of Cleveland, Ohio, in which is discussed the question as to whether such a thing is possible without the patient being awakened. I have on two occasions successfully administered chloroform to patients who were asleep, in one case to a youth aged 16 years, and in the other to a child. In the former case the patient was suffering from paraphimosis. Chloroform was administered slowly at the commencement. No struggling was experienced and circumcision was performed. This took place about 3 P.M. and the patient did not wake until next morning when he was greatly surprised to find that the operation was over. In the case of the child the administration of chloroform was equally successful. Complete anæsthesia was rapidly produced and an operation was performed.

I have had no failures and my experience is limited to these two cases, but "the admitted rarity of such an occurrence" is my reason for bringing them to notice.

I am, Sirs, yours faithfully,

Wolverhampton, April 1st, 1902. W. R. SOMERSET.

PROFESSIONAL LONGEVITY.

To the Editors of THE LANCET.

SIRS,—*Apropos* of the quotation from the *Star* in THE LANCET of March 22nd (p. 856), I think it may interest your readers to know that Mr. Nathaniel Davidson, to whom I was apprenticed in 1852, will attain the patriarchal age of 97 years on Saturday, March 29th. He became a Licentiate of the Royal College of Surgeons of Edinburgh in 1828 and a Licentiate of the Society of Apothecaries in 1829, and is probably the senior survivor of both institutions. Mr. Davidson, after practising in London for 30 years, became a Licentiate of the Royal College of Physicians in 1861. He is, I am happy to say, in very good health.

I am, Sirs, yours faithfully,

CHRISTOPHER HEATH.

Cavendish-square, W., March 25th, 1902.

THE BATTLE OF THE CLUBS.

To the Editors of THE LANCET.

SIRS,—Ever since I have been in practice—13 years—I have acted as surgeon to the Victory Lodge of Druids, the payment being 4*s*. per member per annum. In July I wrote asking that my salary should be increased to 6*s*. on account of the amount of work to be done and owing to the fact that the position of the members warranted my asking for an increase. The secretary on Sept. 17th wrote stating that the lodge could not accede to my request. The same day I gave notice to terminate my appointment on Dec. 17th. Several neighbouring practitioners were nominated as surgeons for the vacancy but not being satisfied with the secretary's statement that I resigned owing to my refusal to attend members at a distance they referred to me, and on hearing that the

only question between the lodge and myself was one of salary they withdrew their names, and on Dec. 17th the lodge was still without a surgeon and they were obliged to ask me to continue to act for the time being. In January four more names were put forward and to these I addressed a letter stating all the facts; three of the four withdrew their names. The other wrote me the following letter:—

38, Old-street, E.C., Jan. 29th, 1902.

DEAR DR. JONES,—I received your letter yesterday and am sorry that I had not received an intimation earlier, for the Druids approached me a fortnight ago and asked me would I allow myself to be nominated as a candidate. I then inquired what was the reason of your resigning and they informed me you would not visit their prescribed distance. On these grounds I allowed myself to be nominated and I cannot very well now withdraw as I have another of their branches at the usual rate. Had I known before what was the difference between you and the club I certainly would not have allowed myself to be nominated.

Yours faithfully,
I. DORRAN.

In reply I wrote—

DEAR DR. DORRAN,—I thank you for the letter of the 29th inst. in which you state that the Druids secured your consent to be nominated by telling an untruth, yet you say you cannot now withdraw. Of course, I can only appeal to you again not to accept less than 6s. per member, if you do I shall consider your action as a deliberate attempt to undersell a neighbouring practitioner and I think the profession, to whose judgment I propose to submit the whole correspondence, will be of the same opinion. Yours faithfully,
EVAN JONES.

At the end of February this gentleman was appointed at 4s. per annum. The above shows how much chance there is of success to any man who makes an attempt to improve the status of club practice. I fear his only satisfaction will be in the fact that he has given up attending men who could well afford to pay more.

I am, Sirs, yours faithfully,
Goswell-road, E.C., March 29th, 1902. EVAN JONES.

THE ACETYLENE LIGHT IN OMNIBUSES.

To the Editors of THE LANCET.

SIRS,—THE LANCET of March 1st, p. 608, contained some references to acetylene as being injurious to the health of those coming in proximity to lamps burning this gas. Knowing that among those engaged in and about the manufacture of acetylene there has never been any complaint of any deleterious effects from their intimate association with the gas I was somewhat astonished at the statements made by your contributor. I ventured to call the attention of two of the honorary members of this association, Professor Vivian B. Lewes and Dr. Boverton Redwood, to his remarks and inclose copy of their reply which I should be obliged if you would kindly insert in your next issue.

I am, Sirs, yours faithfully,
LACEY DOWNES,
Secretary to the Acetylene Association.
Ironmonger-lane, Cheapside, London, E.C., March 18th, 1902.

[INCLOSURE.]

London, March 15th, 1902.

Lacey Downes, Esq., Secretary, *pro tem.*,
The Acetylene Association, 11, Ironmonger-lane,
Cheapside, E.C.

DEAR SIR,—In accordance with the request conveyed by your letter of the 11th inst. we have given careful consideration to statements made in an article on the Acetylene Light in Omnibuses published in THE LANCET on the 1st inst.

The writer of this article alleges that grave complaints of the smell of the gas have been made by passengers as well as by drivers, and expresses the apprehension that injury to health may be caused by the sulphur and phosphorous compounds present in acetylene made from commercial carbide of calcium. The average proportion of impurities referred to is extremely small, being in the case of phosphoretted hydrogen 0·041 per cent. and in that of sulphuretted hydrogen 0·052 per cent., or in the aggregate less than one-tenth of 1 per cent.

According to our experience a lamp leaking to the extent of 1 per cent. of its "make" of gas produces a smell which is stronger than any we have observed in the use of acetylene generators, except during emptying and recharging. We therefore consider that the volume of escaping gas cannot exceed this very small proportion, and as this 1 per cent. itself only contains $\frac{1}{10}$ of 1 per cent. of phosphoretted hydrogen and would at once be diluted with an enormous volume of air it is in our opinion impossible for it to "give rise to symptoms of poisoning" and absurd to suggest that it might produce "phossy jaw."

We are, dear Sir, yours truly,
(Signed) VIVIAN B. LEWES.
BOVERTON REDWOOD.

*** Cases of sickness due to acetylene gas escaping from omnibus lamps have undoubtedly been reported and in this connexion we may refer to a communication from a correspondent which was published in THE LANCET of March 15th, p. 789. As the above chemists point out, the percentage amount of impurities is exceedingly small, yet these are sufficient to make the gas decidedly offensive. The question as to how far acetylene, pure or impure, is injurious to health is obviously one for the medical profession to decide.—ED. L.

DRUNKENNESS AND THE ABUSE OF NARCOTICS.

To the Editors of THE LANCET.

SIRS,—I cannot allow Dr. J. B. Hunter's assertion in THE LANCET of March 29th, p. 919, that "this nation will never be made sober by any other means" than legislation to pass unchallenged. The revenue returns, for last year, showing an actual decrease of a million and a half of pounds sterling instead of a considerable increase as has hitherto been usual, give the impression that temperance may result from other causes than legislation. A large class of this nation, the educated class, has certainly become temperate without legislation. This class, which in a sense may be said to have a public-house always accessible in its dining-room sideboard, has advanced in the last century from habitual excess to moderation and of late in very large measure to almost total abstinence. Yet this change is not due to legislation but to a change in public opinion. Instead of its being considered to be an evidence of "spirit" to drink to intoxication it was thought to be degrading for a gentleman to be drunk, and now it is becoming recognised that it is more healthy to abstain.

Direct legislation by the shutting up of public-houses and by the limitation of the hours of sale can do nothing to change the views of the lower classes; it will rather intensify them by giving the excitement that always arises in evading legislative restrictions. Indirectly, however, legislation can do much by teaching the people to regard drunkenness not as an amiable weakness but as a crime and by punishing not only the criminal but publicans and others who are accessory to the crime.

A temperance reformer has of late appeared that will effect more in ten years than a century of teetotal societies or a thousand legislative enactments—the bicycle. Every growing young man now wants a bicycle, which is bought with money that would be spent on beer, which cannot be ridden to advantage by a man who drinks beer, which affords amusement apart from the public-house and thus occupies time that would otherwise be spent in drinking. Education, healthy amusement, and varied interests, by altering the public opinion in regard to drunkenness will result in temperance in the lower classes, even if there were free trade in liquor and anyone might have for the asking a licence to sell it. I am, Sirs, yours faithfully,
April 2nd, 1902. R.

NOTES FROM INDIA.

(FROM OUR SPECIAL CORRESPONDENT.)

The Final Census Returns.—The Plague Epidemic: Alarming Increase.—A Large Improvement Scheme for Calcutta.—A Marwari Hospital for Calcutta.

IT will probably interest your readers of Indian experience to hear the final census returns. The grand total for the whole of India is 294,362,676, of which number 149,953,765 were males and 144,408,911 were females. The provinces show populations as follows: Assam, 6,000,000; Bengal, 74,750,000; Bombay, 18,500,000; Burmah, 10,500,000; Central Provinces, 10,000,000; Madras, 38,000,000; North-west Provinces and Oudh, 47,500,000; Punjab, 20,250,000; and the various States and Agencies, 62,500,000. Of the grand total 29,250,000 form the urban populations, the great mass of the people—over 265,000,000—living in the villages. The excess of males both in the towns and villages is noteworthy. This final result of the census has been obtained within one year—a record of work probably unique.

Dr. Gloster, Dr. Walsh, Dr. Horton, Dr. Lewis, and Dr. Justice—plague medical officers who have been given commissions in the Indian Medical Service—have been ordered to proceed home and to join the Army Medical School, Netley, for a course of training.

The weekly plague statement shows a terrible increase in mortality. No less than 21,789 deaths are recorded, as against 14,946 in the previous seven days and 6991 for the

corresponding week of last year. The chief increase is in the Punjab where 10,525 deaths were recorded. Two cases have occurred in the segregation camp at Rangoon, both of which were imported from Calcutta. The disease has broken out in Quetta and has suddenly assumed great virulence at Hyderabad (Sind); it has also increased in Karachi; it is rising in Bombay and has developed rapidly in Calcutta. On the other hand, it is subsiding in Poona. The figures for the week are: Bombay Presidency, 5303 deaths; Bengal, 1101; Madras, 456; North-west Provinces, 2143; Mysore, 426; and Kashmir, 350. In Bombay city there were 750 deaths and in Calcutta 349. The rate of mortality in Bombay city is 109·5 per 1000. It is reported that at Hassan in the Madras Presidency the plague has completely exterminated all the squirrels. Hassan was formerly full of them. The inhabitants are encamped on the outskirts of the town.

An important proposal has, it is understood, been submitted to Whitehall by the Government of India to improve Calcutta by means of wide thoroughfares. The work to be undertaken will comprise about 15 miles of improved roads and will be enormous. It is estimated to cost about one and three-quarter millions sterling in order to acquire the necessary property. A question at issue is as to who will find the money. The provincial authorities say that the work is imperial and that it should be undertaken by the Government of India, while the latter says in effect that Calcutta will alone be benefited and that Calcutta should pay. A proposal is made that the Secretary of State should sanction the municipal corporation raising at least 150 lakhs, which would be laid out by an improvement trust. The Government of India, it is said, offers from 15 to 20 lakhs. The hill stations have been largely helped by the Government of India; two-thirds of the cost of the Simla water-supply were paid by Government, and the protection works at Naini Tal and Darjeeling were also paid for by Government. The proposed work is much too large for Calcutta to bear the whole burden.

Another hospital has been opened in Calcutta. This has been built and endowed by a wealthy Marwari and is intended for Marwaris chiefly, although its benefits will be extended to Hindus generally. It is situated in the heart of the city close to the Marwari quarter. The hospital was formally opened by Lady Curzon yesterday and it is known as the Rai Bhagwan Dass Hospital. An outdoor department has been open for some time. The indoor department consists of one male ward for 20 patients and one female ward for five patients. There will be in addition an accident ward, a lying-in ward, and a contagious diseases ward. There is to be a resident surgeon superintendent and also a lady doctor.

March 8th.

The Plague Epidemic.—The Indian Institute of Science.

A further addition to the already high mortality from plague has been recorded this week. The total deaths from plague throughout India number no less than 23,715, as against 21,789 during the previous week. For the corresponding week of 1901 the deaths were only 7900. Nearly every province shows an increase, but the Punjab is now the chief sufferer and returns no less than 12,544 deaths. The disease has increased in Bombay city, where 888 deaths are recorded; in Calcutta, where the deaths are returned at 462; and in Karachi. The mortality is still very severe in the Bombay districts, from which 4806 deaths are recorded, and it has increased and spread in the province of Bengal, where 1235 deaths have come under notice. In the Madras Presidency there were only 361 deaths, but in the united provinces there were 2187. In Kashmir with 553 deaths, Hyderabad State with 149 deaths, and in the Mysore State with 414 deaths, there is little change.

The proposed institute for scientific research which was known at first as the Tata Institute, having been provided through the liberality of Mr. Tata, a wealthy Parsee in Bombay, is to be formally called the Indian Institute of Science. There are to be three distinct schools, respectively for chemistry, experimental physics, and experimental biology. In the last section will be taken up physiological investigations and of course bacteriological work. The establishment is to consist of three professors and three assistant professors, and later instructors will be appointed from among the successful students. It has now been definitely decided that the site of the institute shall be in Bangalore.

March 13th.

LIVERPOOL.

(FROM OUR OWN CORRESPONDENT.)

The Proposed Liverpool University.

Two months ago a public meeting was convened by the Lord Mayor to consider the movement for the conversion of University College, Liverpool, into the University of Liverpool. A gratifying evidence of the earnestness with which the movement has been taken up is shown by the advertised subscription list, which amounts to £145,000. Two donors have subscribed £25,000 each. There are three donors of £10,000 each, eight of £5000 each, one of £3000, one of £2000, and 12 of £1000 each. The medical profession has shown a great interest in the new movement, £1050 having already been announced as the subscriptions of eight medical men. During the 21 years of its existence University College, Liverpool, has received gifts in land, buildings, equipment, and endowments amounting to £500,000, exclusive of books in the library, of apparatus in the laboratories, and of the annual income of affiliated schools. The present appeal, as stated in a former issue of THE LANCET, is for an additional capital sum of £330,000, so as to provide for studies that should find a place in any complete system of university education. Additional buildings for the faculty of arts, the extension of the college library, and a hall for examinations and public ceremonies are objects which are specially in view. So far the subscriptions are confined to a small proportion of the citizens. As the object of the movement is to bring the advantages of a university education within the reach of all, it is most desirable that the subscription list should be representative of all classes. Artisans, clerks, and others are specially invited to contribute their mites towards founding the new university.

Lunacy in the West Derby Union.

In his report of his visit to the workhouse infirmary of the West Derby Union Dr. Cooke, visiting Commissioner in Lunacy, stated that he found 109 inmates—58 males and 51 females—classed as of unsound mind, or 24 less than at the visit of his colleague a year ago. This diminution in the number was due to the opening of Winwick Asylum, vacancies having been created thereby at the county asylums. There were vacancies in the imbecile block for 17 men and 22 women, but notwithstanding it was anticipated that the number would be still further reduced. The patients were contented and orderly and he was satisfied with their personal condition and clothing. Some of them were under 14 days' detention orders recovering from the effects of excess in drink, but the majority were chronic cases and he saw but few who needed, or were likely to benefit from, asylum treatment. Great care should be exercised in selecting patients to be sent to the asylums, otherwise those institutions would speedily become filled again and great difficulty would be experienced in finding room for curable and other urgent cases. The register contained only two entries of mechanical restraint; in both instances the jacket was employed. He gathered, however, that troublesome patients were sometimes confined to bed by a sheet tied to the bedstead. This method must be regarded as restraint and entered as such in the register. The Commissioner suggested that some cheap coloured prints should be hung on the walls to brighten the day rooms.

The Country Hospital for Chronic Diseases of Children.

The sum of £18,286 has been subscribed for the building fund of this new hospital. The committee has appealed for £30,000, inclusive of the maintenance fund. The work of the hospital is carried on at present at the convalescent home at West Kirby, the committee of that institution having kindly placed 20 beds at the disposal of the committee of the Country Hospital. An anonymous donor of £5000 has made it a condition of his gift that building operations are not to be begun until the full amount required has been obtained. The new hospital will contain 200 cots. 19 patients have been discharged during the year 1901, the greater number having been inmates for upwards of 12 months. In two cases there was no improvement, whilst many were discharged as cured. 22 cases remain under treatment, the majority of whom are doing well. There were two deaths during the year.

April 1st.

IRELAND.

(FROM OUR OWN CORRESPONDENTS.)

National Association for the Prevention of Consumption and Other Forms of Tuberculosis. Dublin Branch.

A MEETING of the executive committee of the Dublin branch of the National Association for the Prevention of Consumption and Other Forms of Tuberculosis was held on March 25th to consider an important proposition brought before it by Sir Christopher Nixon, President of the Royal College of Physicians of Ireland, with regard to the establishment of a sanatorium for the treatment of consumption among the poor of Dublin and its suburbs. Sir Christopher Nixon mentioned that the sisters of mercy had recently acquired the house and demesne of Beaumont, embracing some 110 acres, for the purpose of providing a convalescent home for the patients of the Mater Misericordiæ Hospital. It occurred to him to suggest that advantage might be taken of the site to establish a sanatorium for the reception and treatment of cases of consumption among the destitute poor who could not be treated with hope of beneficial results in a general hospital. He explained that the sisters of mercy were ready to offer their services in taking charge of the institution and nursing the patients on the following conditions: (1) that the sanatorium should be built and fully furnished, and (2) that the expenses should be defrayed for the maintenance of the patients and the proper working of the institution. Sir Christopher Nixon also laid before the committee a letter from Dr. Walsh, the Roman Catholic Archbishop of Dublin, in which he (Dr. Walsh) stated that he approved of the project and would do anything he could in aid of it. The following motions relative to the project were passed unanimously:—

Resolved—That the Council of the Dublin Branch of the National Association for the Prevention of Tuberculosis have heard with deep interest and sympathy of the probability of the establishment of a sanatorium in the vicinity of Dublin in which the destitute poor of the city and suburbs afflicted with pulmonary consumption may be satisfactorily treated in the early and remediable states of that complaint.

Resolved—That the council are of opinion that the advantages likely to accrue to the public health from the establishment of the proposed sanatorium are of a twofold kind: first, far-reaching benefit to the patients themselves; secondly, a widespread influence for good from an educational standpoint, patients and their families being taught how to prevent the spread of the infection of tuberculosis.

The Royal Victoria Hospital, Belfast.

At the annual meeting of the friends of this institution, which was held in Belfast on March 18th, it was reported that 2080 patients had been treated in the hospital during the year and 354 in the convalescent home, 29 in the consumptive department, and 137 in the children's hospital, making a total of 2600 cases; in addition to which 25,453 patients had been treated in the out-patient department. The receipts from all sources were £12,487 9*s.* 5*d.* and the expenses were £11,589 5*s.* 2*d.* The necessary expenditure exceeds the legitimate income by £2051 15*s.* 9*d.* The new hospital will be ready early next year and the better and greater accommodation it will afford must necessarily involve a much larger expenditure; therefore it is necessary to make timely preparation for this additional outlay. A cordial vote of thanks was given to the medical and surgical staff for their services during the year.

Small-pox in Belfast.

So far only one case of small-pox—introduced from Glasgow—has occurred in Belfast. At the meeting of the Belfast Guardians on March 18th a resolution was passed requesting the Local Government Board to make arrangements by which persons suffering from any infectious disease shall not be removed from the gaol, where there is sufficient hospital accommodation provided, as there is grave danger incurred in the transit of these cases through the centre of a crowded city. The guardians say that the police authorities have no right to rid themselves of responsibility by driving a small-pox patient from the gaol to the workhouse through a crowded city.

Ulster Medical Society.

An adjourned meeting of this society was held in the Pathological Laboratory of Queen's College, Belfast, on March 20th, Professor W. Whitla, the president, being in the chair. Dr. J. McLiesh read a paper on the Blood in a Case of Skin Disease; Dr. R. Allen read a paper on Granular Leucocytes in Tumours, illustrated by microscopic sections; Dr. H. L. McKisack and Lieutenant D. McCay, I.M.S., read Notes of Pyelitis in Young Children; Mr. R. J. Johnstone showed the organs from a case of Molluscum Fibrosum with Fibrous Tumours in the Stomach and a specimen of a rare form of Enlargement of the Prostate; Dr. Eleanor R. Sproull gave a demonstration of the Structural Changes in the Liver and Kidneys in a case of Acute Yellow Atrophy of the Liver; and Professor J. Lorrain Smith demonstrated the Deposition of Iron in the Liver in a Case of Pernicious Anæmia.

The Royal Commission on Irish University Education.

The commission is to begin its sittings in Belfast, in the Library of Queen's College, on April 2nd. The members are to be entertained to dinner by the Professors of Queen's College and the President has issued invitations for an "afternoon" to meet the Royal Commissioners. It is understood that several very important witnesses will be examined and that the case of the Northern College will be fully presented.

April 1st.

PARIS.

(FROM OUR OWN CORRESPONDENT.)

A New Method of Producing Analgesia of a Tooth for Extraction.

M. Regnier and M. Didsbury recently communicated to the Academy of Medicine a new method of analgesia in dentistry which does away with the use of cocaine, of carbolic acid, or of any of the well-known anæsthetics which are all more or less toxic, and in the use of which the patient runs a risk of poisoning quite out of proportion to the insignificant operation of an extraction. The method is to use an electrical current of high frequency which produces absolute insensibility of the tooth. The current is applied to the tooth by means of a gutta-percha cap lined with gold leaf, and in this way the field of application of the current is limited to the tooth which it is desired to extract. Perfect analgesia is obtained in a few minutes and the tooth can be removed without the patient feeling anything. The application of the current is easy and harmless and the method would seem capable of application to other operations of minor surgery.

A Federation of French Anti-Tubercle Societies.

On March 16th there was held in the hall of the Society of Civil Engineers, the President of the Republic being present, a formal inauguration of the federation of all French societies for the prevention of tuberculosis. These societies, which previously have wasted their strength by acting separately, will now be increased in power by being united. Representatives from 76 societies and 37 cities were present. The President of the new federation is Professor Brouardel and the objects of the federation are to favour the spread of knowledge about tuberculosis and the various methods for its prevention and to unite for the purposes of effective action all societies and persons who have studied the subject from its different aspects. The example of England, where the mortality from tuberculosis has declined by 45 per cent. in 40 years, and of Germany, where it has declined by 12 per cent. in 10 years, should give great encouragement to the struggle in a country like France, blessed in the possession of a beautiful climate, to enjoy which the sick of all nations come in the hope of cure. The central bureau of the federation will serve as a link between the different sanatoriums and as a guide to patients. One case of tuberculosis, for instance, will require treatment in the isolation ward of a hospital; another will do better at a seaside sanatorium and another at a high altitude; another will be so far convalescent that he will be sent to an agricultural colony. The Bureau will in addition organise a system of relief for patients and for this purpose friendly societies will be asked to contribute as well as ordinary charitable persons. The railway companies, so many of whose employés are affected with tuberculosis, will be asked to subsidise local sanatoriums in the respective districts served by them and the military charities will also be asked to help so that soldiers who are on their books may be sent to a sanatorium instead of being allowed to spread infection broadcast by remaining at large.

Professional Secrecy and Hospital Practice.

The Consultative Committee of the Assistance Publique has just formulated an answer to a problem laid before it by Dr. Bonnaire, the obstetric physician to the Lariboisière Hospital. In pursuance of this decision a circular has been sent out to all the hospitals pointing out that professional

secrecy must be strictly observed by every member of a hospital staff. The law is quite plain on the matter, recent decisions of the Court of Cassation having laid down the principle that professional secrecy is never to be violated and that not even in a court of justice can any statement involving such violation be accepted as evidence. The circumstances leading up to Dr. Bonnaire's question were cases of criminal abortion, many of which come under his care. He was anxious to know whether after an admission on the part of the woman herself that such an operation had been performed he, as the *accoucheur* in charge, was justified in informing the authorities, so that the accused might be arrested and such nefarious practices put a stop to. The answer, however, was in the negative.

The Analysis of Urine and the Illegal Practice of Medicine.

The Tenth Chamber of the Correctional Tribunal has just given judgment in a case involving the illegal practice of medicine. The case was that of a pharmaceutical chemist who was accustomed to make analyses of urines. Some patients were sent to him for the purpose by physicians and some came of their own accord. So far there was nothing wrong in his action, for every patient has the right to have his urine examined by whomsoever he wishes. But the pharmaceutical chemist did not stop there, but when he sent the result of his analysis he also formulated a diagnosis and what he considered to be appropriate treatment. He was accordingly prosecuted and the tribunal decided that to make a diagnosis and to prescribe treatment did not fall within the normal province of an analyser of urines and that such conduct trespassed on the preserves of the medical man. The accused was convicted of illegal practice and had to pay 50 francs fine and 50 francs damages to the syndicate of medical men.

April 1st.

NEW YORK.

(FROM OUR OWN CORRESPONDENT.)

Preventive Measures against Small-pox over a Large Area.

THE prevalence of small-pox in the United States is unprecedented and it has led to extraordinary measures to control its spread. The city of Chicago as a centre of trade and travel has an area of 600,000 square miles in 10 States and the remotest boundaries of this area are within a few hours' travel of that city. Between Dec. 28th, 1900, and Jan. 24th, 1901, there were 1070 cases of small-pox reported in that territory, while during the same period ending Jan. 24th, 1902, there were 10,000 cases reported, an increase of 911 per cent. To meet this emergency the Chicago health authorities held a conference with the representatives of the railroads entering the city and submitted a plan of procedure which the railroad officials accepted and will aid in enforcing. The plan contemplates a wholesale vaccination and re-vaccination in every infected locality. The details are as follows. The work along each line of railway will be under the direct charge of the medical director or chief surgeon of the company and a central office will be opened and maintained in the city for the receipt of reports, requisitions, &c., from all persons engaged in the campaign. Competent vaccinators and supplies of pure lymph thoroughly tested will be furnished gratis in all proper cases. Special attention will be paid to the condition of employés in manufacturing establishments, particularly those of textile fabrics, and the railway officials will set the example by still more rigorously making recent vaccination a condition of further employment. Provision is also made for the maintenance of suitable isolation hospitals where necessary and for the thorough disinfection of all premises and their belongings where small-pox has occurred. The officers of the railroads engage to maintain a rigid inspection of all persons wishing to travel from infected localities and to refuse to carry those who do not comply with the requirements.

State Quarantine against Consumptive Persons.

There has been much agitation over the reported action of certain States, reputed to have climates favourable to persons suffering from pulmonary tuberculosis, favouring quarantines against persons suffering from consumption. This is especially true of Colorado, the resort of the larger number of this class. Such action of State officials is now authoritatively denied by past and present officers of the State Board of Health and of the State Medical Society. In a circular these officials deny (1) that any member of the Colorado State Board of Health ever proposed to prevent tuberculous persons from entering the State; (2) that any member of the legislative or executive branch of the State of Colorado ever suggested such action; (3) that there is any law to that effect on the statute-book; (4) that there is any ordinance of any city or town to that effect; and (5) they assert that, on the contrary, the Colorado State Board of Health issued in 1900 a circular, stating that the climate of the State had saved the lives of many who had come early could not be doubted and that there was no need to quarantine against consumptive persons, such a course being both unnecessary and impracticable. They added the following in conclusion: "Doubtless, many persons with advanced tuberculosis should not be sent here, but for those who can be benefited by coming Colorado should have nothing but a warm welcome."

Responsibility for the Deaths from Tetanus following the Use of Diphtheria Antitoxin.

The fact that 13 deaths occurred in St. Louis from tetanus after the injection of diphtheria antitoxin has been noticed in a previous letter. The public alarm at the possibility of such an accident has discredited the use of antitoxin obtained from laboratories under municipal management. The finding of the court appointed by the Board of Health to fix the responsibility for the accident is as follows: "1. The diphtheria antitoxin heretofore issued by the city was prepared, bottled, and distributed by and under the supervision of Dr. Amand Ravoid who was employed by the Health Commissioner, with the approval of the Board of Health, in 1894, as consulting bacteriologist and to have charge of the preparation and distribution of diphtheria antitoxin, and that he was responsible for the quality of material so prepared and distributed. 2. That a horse kept by the city under the supervision of Dr. Ravoid as a producer of diphtheria antitoxin serum was bled by him on Sept. 29th, 1901, and on Oct. 2nd was found to have tetanus and was killed. 3. From Dr. Ravoid's testimony the poisonous character of the serum from this bleeding of Sept. 29th was known to him but he failed to cause the serum to be destroyed. 4. That owing to this inexcusable negligence the poisonous serum was, in part, bottled and issued to physicians between Oct. 10th and 23rd with deplorable results." The recommendation is to the effect that Dr. Ravoid be discharged from the service of the Health Department and that the city do not hereafter manufacture diphtheria antitoxin.

Dispensing with the Term "Insane."

The Butler Hospital for the Insane at Providence, Rhode Island, has dropped the word "insane" from its title and from all its letter-heads and bills, leaving only the term "Butler Hospital." The object of this action is to remove from its inmates the stigma which attaches to their admission to an institution devoted to the care and treatment of the insane. The superintendent, Dr. Blumer, remarks: "Many of our patients come to us needing treatment merely and destined soon to leave restored to perfect health. It is almost a wrong to these patients that it should be said and remembered of them that they have been insane or the inmates of an 'insane asylum' or a 'hospital for the insane.'" This action of the managers of that old and reputable institution is destined to be followed by other similar institutions and the day is not distant when the meaningless terms "insane" and "insanity" will be abolished in this country.

Military Hygiene to be Taught at West Point.

The Secretary of War has directed the academic faculty at West Point to consider and to prepare a course of study to be given to the cadets which shall include full instruction in military hygiene. This addition is strongly favoured by the superintendent and other progressive line officers who believe that the object lessons of the war with Spain should not be disregarded and that the scientific and technical training of the cadets should, if necessary, be cut down so as to permit of their proper instruction in the care of troops. The superintendent is impressed thoroughly with the belief that military efficiency depends upon the attainment of four great essentials—viz., suitable armament, proper food, efficient transportation service, and careful sanitary government; he therefore favours a course of instruction in practical military hygiene to the cadets extending over not less than 30 hours in each academic year.

An American Hospital in Paris.

The American residents in Paris have long felt the need

of a hospital exclusively American in its management. This is about to be realised through the generosity of Mr. Edward Tuck, formerly of New York but for 20 years a resident in Paris. He has assumed the entire expense of establishing this hospital which is to be managed entirely by American physicians and nurses. It is to be called the "Franklin Hospital" and will be located in the Passy quarter, one of the most healthy parts of the city. The site has been purchased and the erection will begin in the spring under the directorship of Dr. Magnin.

March 24th.

Obituary.

EDWARD LONG FOX, M.D. OXON., F.R.C.P. LOND.,

CONSULTING PHYSICIAN TO THE BRISTOL ROYAL INFIRMARY.

THE West of England has lost one of the most representative members of the medical profession by the death of Dr. Edward Long Fox of Clifton, which occurred late on Friday evening, March 28th. He was in active practice till some months ago when his health failed, and though with characteristic determination he at first looked forward to resuming again the work he so dearly loved it soon became increasingly evident that he was beyond hope of recovery. Dr. Fox was the eldest son of the late Dr. Francis Ker Fox of Brislington, near Bristol, where he was born in 1832. He was educated at Shrewsbury School and Balliol College Oxford, where he was brought under the influence of the late Professor Jowett, who was his tutor, and of Sir Henry Acland. The warm friendship and esteem of these representatives of the classical and scientific life at Oxford for their former pupil were never interrupted while they lived and the latter was one of the earliest and most welcome guests when Dr. Fox began his professional career in Bristol. His special bent was shown by taking a first-class in the Natural Science School, after which he proceeded to London to the College of Chemistry under Dr. Hoffmann and entered as a student at St. George's Hospital. At this and at the Great Ormond-street Hospital for Sick Children and the Brompton Hospital for Consumption Edward Long Fox worked especially under Dr. Bence Jones, Dr. Marshall Hall, and Dr. Charles West, till he graduated as M.B. in 1857, proceeding to the degree of M.D. in 1861. In 1859 he became a Member of the Royal College of Physicians of London.

He then commenced to practice in Clifton and was elected a physician to the Bristol Royal Infirmary, a post which he held for 20 years when he was made a consulting physician, being thus connected with that institution for 45 years. He was also lecturer on medicine and on practical pathology at the Bristol Medical School and always took the keenest interest in his teaching and in the welfare of the students working under him, many of whom now engaged in active practice remember with loving regret the friend who has passed out of their lives.

For several years Dr. Fox was examiner in medicine in the final examination for the degree of M.B. at the University of Oxford. He became a Fellow of the Royal College of Physicians of London in 1870, delivered the Bradshaw Lecture in 1882, and was elected a member of the Council of the College in 1888.

When the British Medical Association held its annual meeting in Bristol in 1894 Dr. Fox, already a past president of the Bath and Bristol Branch of the Association and of the Bristol Medico-Chirurgical Society, was elected President. His genial presence and warm-hearted hospitality added much to the pleasure of those who took part in that meeting, while his earnest desire that the scientific work done should be worthy of the Association and of the city of Bristol was largely attained by the cordial coöperation which both his medical colleagues and fellow citizens were so ready to afford. The lofty aspirations and high professional ideals which the life of Dr. Fox so well exemplified were reflected in the presidential address at that meeting on the Medical Man and the State, when he said: "The sands of time are sinking year by year for all of us; but the memory of the great ones in the past is a spur to further effort, an example for a truer and higher life in us all; and happy shall we be if we can pass on undimmed to our successors the lamp of high professional honour and of scientific attainment which has been handed down to us from our predecessors." No one evinced a greater interest in the work of the National Association for the Prevention of Consumption than did Dr. Fox, and he it was who took the first steps in the movement which eventuated in the formation of the Gloucester, Somerset, and Wilts branch. Up to a few months ago he filled the office of chairman of the committee of this branch and many of his fellow-workers in the cause will remember his untiring interest, despite his physical weakness, in the work of inspecting the beautiful site found and suggested by Dr. Lionel A. Weatherly and so recently prepared for the proposed sanatorium at Winsley.

Dr. Fox took a great and broad-minded interest in the temperance question, being president of the National Temperance League in 1894; he also for several years personally worked on behalf of the temperance cause in one of the poorest parishes of Bristol. Dr. Fox was the author of works on "The Pathological Anatomy of the Nervous Centres" and "The Influence of the Sympathetic on Disease," which were published in 1885. He also contributed various articles to the medical journals and a series of articles to "Quain's Dictionary of Medicine." He married Miss Bradley, one of the daughters of the late Rev. Charles Bradley of Clapham and sister of the present Dean of Westminster. The Dean of Bristol, in preaching at the Cathedral on Easter Day, referred in sympathetic terms to the death of Dr. Fox, of whom he spoke as a type of the Christian physician. The burial took place on April 3rd at Arno's Vale Cemetery, the first part of the burial office being said in Clifton Parish Church at 12.30.

JOHN TURNER CADDY, M.D. ABERD.,

DEPUTY INSPECTOR-GENERAL OF HOSPITALS AND FLEETS, R.N.

THE death took place on March 21st of Dr. J. T. Caddy, Deputy Inspector-general of Hospitals and Fleets, R.N. (retired), at his residence, The Charterhouse, Richmond, Surrey. Dr. Caddy was 80 years of age, of which 31 years were spent at sea and many on the training ships for men and boys at Falmouth and Bristol. He was in receipt of the Greenwich Hospital good service pension. In conjunction with the late Sir William Smart and Dr. Frederic James Brown he took a leading part in the movement for the "consideration of the rank, pay, and position of medical officers in the Royal navy" 50 years ago and his views were quoted in Parliament by Mr. Wakley, M.P., the coroner for Middlesex, with excellent effect. Dr. Caddy was of an old Devonshire family and after being apprenticed to a practitioner for five years he finished his medical studies at Guy's Hospital where he succeeded in winning several prizes. He was the author of several contributions to the medical journals and of papers read before learned societies. Two of his sons and his son-in-law are members of the medical profession.

Medical News.

VICTORIA UNIVERSITY.—At the degree ceremony on March 26th the following candidates were presented:—

BACHELOR OF MEDICINE AND OF SURGERY.

Edward Maynard Ashcroft and Frank Henry Staunton Ashworth-Owens; Herbert Martin Berry, University; Arthur Torkington Blease, Joseph Basil Cook, Rowe Brennand Fletcher, James Edward Floyd, James Hindshaw, and Hugh Llewellyn Jenkins, Owens; John Anderton Johnson, University; Charles Paget Lapage and Harry Fox Lee, Owens; William Leonard Maccormac, Yorkshire; Harold Scott McLellan, William Parker, and Charles Albert Ricketts, Owens; E. Emrys Roberts, University; and George Taylor, Owens.

In the Faculty of Medicine the following candidates have been successful in the examinations indicated:—

FINAL EXAMINATION.

Part I.—J. W. Anderton, Owens; P. W. Ashmore, Yorkshire; J. P Bligh, University; L. R. Braithwaite, Richard Coates, and Edward Cundall, Yorkshire; A. J. Edmonds, A. H. Gregson, Godfrey Heathcote, and Benjamin Herald, Owens; W. E. Hewitt, University; B. H. Hirst, Yorkshire; A. S. Hopper, University; A. E. Johnson, Owens; R. E. Knowles, W. G. Lloyd, and H. F. McManus, University; Harry Maffin, Yorkshire; W. B. Ramsden, Owens; F. H. Salisbury, University; P. K. Steele, J. C. Teasdale, and A. B. S. Todd, Yorkshire; David Walker and Alwyn Wharton, Owens.

Part II.—E. M. Ashcroft and F. H. S. Ashworth, Owens; H. M. Berry, University; A. T. Blease, Owens; R. N. Butterworth, Yorkshire; J. B. Cook, R. B. Fletcher, J. E. Floyd, James Hindshaw, and H. L. Jenkins, Owens; J. A. Johnson, University; C. P. Lapage and H. F. Lee, Owens; W. L. Maccormac, Yorkshire; H. S.

McLellan, William Parker, and C. A. Ricketts, Owens; E. E. Roberts, University; and George Taylor, Owens.

SECOND EXAMINATION.

A. Anatomy and Physiology.—Fred Bailey and F. P. H. Birtwhistle, Yorkshire; William Calverley, Catherine Chisholm, and Reginald Collier, Owens; W. E. Cooke, University; Catherine L. Corbett, G. D. Dawson, R. L. Ferguson, and Joseph Fletcher, Owens; E. R. Flint, Yorkshire; E. S. H. Gill, University; F. W. M. Greaves, Yorkshire; W. L. Hawksley and Pantland Hick, University; F. C. Hudson, B. E. Hughes, and Ernest Hulme, Owens; Lancelot Hutchinson and T. L. Kenion, University; C. E. Lea, T. W. P. Leighton, J. T. R. MacGill, Hector Mackenzie, and H. E. Moore, Owens; G. C. Scott, University; James Smalley, J. F. Smith, Philip Talbot,* and Henry Thorp, Owens; Herbert Tomlin, Yorkshire; A. M. Walker, Owens; T. E. Walker and H. W. L. Waller, University; F. J. Walton, W. D. Wilkins, and J. S. Young, Owens.

B. Materia Medica and Pharmacy.—A. W. Byrne, University; Archibald Cambell and P. C. Garrett, Owens; E. F. Hoare, University; S. E. McClatchey, Owens; S. W. McLellan and H. G. Thompson, University; S. H. West, W. A. Wheeldon, and H. V. White, Owens.

* Was awarded University scholarship.

ABERDEEN UNIVERSITY.—At examinations for the degrees of Bachelor of Medicine and Bachelor of Surgery the following candidates were successful in the subjects indicated:—

Medicine, Clinical Medicine, Surgery, Clinical Surgery, and Midwifery.—Louis Coetzee, *Lewis D. Cruickshank, Jas. B. Elder, Harry W. Elwell, *Robert D. Keith, Geo. B. Kiloh, Jeannie C. Macleod, Archibald Mahomed, James B. Rae, *Alex. C. Reid, Alex. Robertson, R. B. Robson, John S. Rose, Thos. S. Slessor, Jas. Soutter, and Alex. Watt.

Pathology and Medical Jurisprudence.—Frank W. Begg, *Hugh S. Brander, Richard G. Brown, †Alex. Callam, A. Dyce Davidson, William Elwood, James Farquhar, Maurice B. Johnson, *Alex. F. Maclean, Gordon W. Macnamchie, *G. G. Macdonald, William Macgillivray, John A. McKenzie, †Hugh Maclean, Malcolm Macleod, †William A. Mearns, Kenneth S. Melvin, Jas. E. Mennie, Andrew B. Morris, *W. F. Munro, *Stephen Niven, *F. G. T. Peterkin, Frank L. Pelly, James B. Rae, J. H. Shepherd, *F. K. Smith, William A. Smith, †William C. Souter, William Stewart, *George Stoddart, Cornelius A. Suvoong, *Arthur J. Watt, and William Alfred Watson.

Pathology.—William R. Pirie and George B. Sleigh.

Anatomy, Physiology, and Materia Medica.—Francis Anderson, William Anderson, *William Beedie, *William R. Catto, *Alex. Flett, James S. Gray, George Hall, John Hunter, Alex. Hutchison, Henry W. Jeans, *Francis H. Johnson, *Frederick L. Keith, Geo. E. Macallan, Malcolm Macleod, and John M. Taylor.

Anatomy and Physiology.—Catherine E. Anderson, John Anderson, James Clark, Francis W. Davidson, Alex. Duguid, Walter A. Elwood, Thos. C. Innes, Neil Kennedy, Helen McGlashan, Donald McKay, Charles G. McMahon, Archibald D. Pringle, Michael B. H. Ritchie, Alex. N. Ross, Bertie R. G. Russel, Herbert W. B. Ruxton, Cyril M. Smith, and William Wood.

First Professional Examination (Botany, Zoology, Physics, and Chemistry).—Alex. Brown, Robert B. Duncan, Francis W. Falconer, Alex. D. Fraser, Alistair S. Garden, Chas. B. Gerrard, Stewart C. Howard, Cecil V. Impey, Alex. W. Laing, James M. Macdonald, *James Macintosh, Kenneth Mackinnon, *George Milne, *Benjamin Mitchell, H. R. Neilson, Gavin E. A. Petrie, Arthur W. B. Pirie, John Proctor, Alex. Robertson, Paul B. Roth, Robert F. Russel, Jas. A. Scharenguivel, Jas. Silver, Robert N. Thomson, and Isaac T. B. DeVilliers. The following have passed one half of the first professional:—Geo. Cooper, Alex. McR. Donaldson, Herbert W. Glashan, Alfred P. Hall, Neil P. Macphail, Jas. Raffan, David McD. Roger, Geo. E. Shand, Henry Smit, and Alex. F. Wallace.

* Passed with distinction. † Passed with much distinction.

The Diploma of Public Health (D.P.H.) has been conferred upon the following:—

E. Nash, M.B., Ch.B., The Holt, Hertfordshire; W. Bisset, M.B., Ch.B., Aberdeen; and F. Keyt, M.B., C.M., Ceylon.

MR. JOHN LLOYD DAVIES, L.R.C.P. Lond., M.R.C.S. Eng., was returned on March 25th as a member of the Newport Town Council.

MEDICAL MAGISTRATE.—Mr. Francis Richardson Cross, M.B. Lond., F.R.C.S. Eng., has been placed on the Commission of the Peace for the city and county of Bristol.

ANDERSON'S COLLEGE MEDICAL SCHOOL.—The winter session of Anderson's College Medical School was formally closed on April 1st when the prizes were distributed by Lord Provost Chisholm. There was a large attendance of students and of the public. Mr. A. Malloch Bayne, president of the school, occupied the chair. The Lord Provost briefly addressed the meeting and commented on the nobility and the beneficence of that field of effort and enterprise which the students had chosen as their future lot. They had already shown their high appreciation of it by the fact that they had made it the object of their choice; but they would allow him to say, as one drop in the great cloud of witnesses by which they were surrounded, that they who merely stood outside looked on with affection and admiration—affection for the men and admiration for the efforts and triumphs of those who were engaged in the fields of medical and surgical science and who had by their efforts and labours produced results so marvellous in themselves and had wrought such delightful achievements for the relief of the suffering and sorrows of the world.

INEFFICIENT VACCINATION.—In the course of an inquiry held at Bristol on March 25th into an application of the city council to the Local Government Board for sanction to borrow £44,266 for isolation hospital purposes the inspector (Mr. Arnold Royle, C.B., M.R.C.S. Eng.), on being informed by the medical officer of health that there was a great deal of one-mark vaccination in Bristol, observed that such vaccination was inefficient and only an imperfect protective against small-pox.

BROMSGROVE, REDDITCH, AND DROITWICH ISOLATION HOSPITAL.—The new isolation hospital for the combined districts of Bromsgrove, Redditch, and Droitwich was opened at Hill Top, Bromsgrove, on March 25th, by Mrs. Amphlett, wife of Mr. R. H. Amphlett, K.C., the chairman of the Joint Hospital Committee. The new building is the latest of several isolation hospitals which have been provided in recent years in different parts of Worcestershire on the initiative of the Worcestershire County Council, and it supplies a long-felt want in this part of the country. For many years the district medical officers of health of the three towns concerned have been urging the necessity for hospital accommodation for the isolation of infectious disease, but the heavy expenditure needed for building and maintaining a suitable hospital has always stood in the way of action by an individual sanitary authority. Some attempts at combination had been made, but it was not until the county council intervened in 1896 that practical steps became possible. In that year the county council, acting upon the powers given to them by the Isolation Hospitals Act of 1893, formed the three towns of Bromsgrove, Redditch, and Droitwich, together with the intervening rural districts, six sanitary authorities in all, into a combined area for the provision of a joint isolation hospital. An admirable site on high ground was secured at Hill Top, Bromsgrove, in 1897, and in June, 1898, a temporary hospital of wood-lined iron buildings and double-walled tents was opened for the reception of patients suffering from scarlet fever. This temporary hospital is still in use and has done excellent work, some 340 cases of scarlet fever having been treated with a mortality of 13 only. Plans for the permanent hospital were then prepared by Mr. Hare of London and the building was commenced in 1900. It consists of an administrative block containing the principal offices with ample accommodation for nurses, servants, and porter; four separate ward blocks and a sixth block containing a fully equipped laundry with drying cupboards, ambulance house, mortuary, and a seven-feet Thresh disinfector. Each ward block is divided into male and female wards, with nurse's room between, the largest for scarlet fever patients, the others for enteric fever, diphtheria, and doubtful cases respectively. The number of beds is nominally 40, the scarlet fever block containing 18, the enteric fever block 14, and the remaining blocks four beds each, but the cubic air space allowed for each bed is so great that an addition to this number, especially of children's cots, can easily be made. The cubic space provided is over 2500 cubic feet per bed in each block and in the smaller wards it is over 3000 cubic feet per bed. The population of the combined districts served by the hospital is 56,777. The temporary hospital, having been used for over three years for cases of scarlet fever, is now to be transferred to another part of the district where it is to be erected and kept in readiness for the isolation of small-pox cases should the necessity arise.

Appointments.

Successful applicants for Vacancies, Secretaries of Public Institutions, and others possessing information suitable for this column, are invited to forward it to THE LANCET *Office, directed to the Sub-Editor, not later than 9 o'clock on the Thursday morning of each week, for publication in the next number.*

BARFORD, A. M., M.D., L.R.C.P., M.R.C.S., has been appointed Assistant Anæsthetist to the Royal Dental Hospital, Leicester-square.

BOYES, JANE, L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer for the Island of Coll, Argyllshire.

BOYLE, N. C., L.R.C.P., L.R.C.S. Edin., has been appointed Medical Officer of Health by the Penge Urban District Council.

BRISCOE, WILLIAM THOMAS, M.D., M.Ch. Dubl., has been re-appointed Medical Officer of Health of the Pewsham District by the Chippenham Board of Guardians.

CORLETTE, C. E., M.D. Syd., has been appointed Acting Honorary Assistant Surgeon to the Women's Hospital, Sydney, during the absence of Sir James Graham in Europe.

DAVY, T. G., M.R.C.S., L.S.A. Lond., has been appointed Honorary Medical Officer to the Fremantle Hospital, West Australia.

ERSON, E. G. LEGER, L. & L. Mid. R.C.P. Edin., has been appointed Officer of Health, Peak Hill, West Australia.

EVANS, ARTHUR, M.S. Lond., F.R.C.S. Eng., has been appointed Assistant Surgeon to Westminster Hospital.

GREENWOOD, A., M.D. Vict., has been appointed Medical Officer of Health of Blackburn, vice Dr. James Wheatley.

HALL, JAMES A. T., L.R.C.P., L.R.C.S. Edin., L.F.P.S. Glasg., has been appointed Medical Officer and Public Vaccinator of the Stoke Golding District of the Hinckley Union, vice Dr. E. J. Pritchard, resigned.

HUNTER, MITCHELL, M.D. Miami Med. Col., L.S.A. Lond., has been appointed Certifying Surgeon under the Factory Act for the Magherafelt District of the county of Londonderry.

HUNTER, W. M., M.B., B.S. R.U.I., has been appointed Certifying Surgeon under the Factory Act for the Crumlin District of Antrim.

LISTER, HAROLD, M.B. Melb., has been appointed Acting Medical Superintendent of the Ararat Lunatic Asylum, Victoria, during the absence on leave of W. H. Barker, M.R.C.S. Eng.

LLOYD, F. S., M.B. Lond., has been appointed Certifying Surgeon under the Factory Act for the Luton District of Bedfordshire.

MACVIE, A., M.D. Edin., has been re-appointed Medical Officer of Health by the Baildon Urban District Council, Yorks.

MITCHELL, JAMES THOMAS, M.D., Ch.M. Aberd., M.R.C.S., has been appointed Resident Medical Officer to the Ballarat Benevolent Asylum and Lying-in Home, Victoria.

MCLEAN, J. C., M.B., C.M. Edin., has been appointed Medical Officer of Health by the Doncaster Rural District Council.

MOSSOP, A. G., M.R.C.S., L.R.C.P., L.R.C.S. Irel., has been re-appointed Medical Officer of Health by the Newhaven Port Sanitary Authority.

NETTLE, WILLIAM, M.R.C.S., L.S.A., J.P., has been re-appointed Medical Officer of Health by the Liskeard Rural District Council.

NICHOLLS, JOHN MICHAEL, L.R.C.P. Lond., M.R.C.S., J.P., has been re-appointed Medical Officer of Health of St. Ives, Cornwall.

PALLETT, T. E., L.S.A. Lond., has been appointed Certifying Surgeon under the Factory Act for the Earl's Colne District of Essex.

PEARSE, JAMES, M.D., C.M. Edin., has been appointed Medical Officer of Health of Trowbridge, Wilts.

REIACH, JAMES, M.B., M.S. Edin., has been appointed Government Officer and Vaccinator at Molong, New South Wales.

SAUNDERS, LEONARD DOUGLAS, M.R.C.S. Eng., L.R.C.P. Lond., has been appointed House Surgeon to the Hastings, St. Leonards, and East Sussex Hospital, Hastings.

SHAW, A. H. P., M.R.C.S., L.R.C.P. Lond., has been re-appointed Medical Officer of Health of Frittenden.

TAYLER, GEORGE CHRISTOPHER, M.D., L.R.C.P. Lond., M.R.C.S., has been re-appointed Medical Officer for the No. 3 District by the Westbury, Wilts, Board of Guardians.

THOMAS, J. TELFER, L.R.C.P. Lond., M.R.C.S., has been re-appointed Medical Officer of Health for Camborne, Cornwall.

WATTS, W. F., M.R.C.S. Eng., L.S.A., has been re-appointed Medical Officer of Health by the Dewsbury Borough Corporation.

WHEATLEY, J., M.D. Lond., has been appointed Medical Officer of the county of Shropshire.

WILLIAMSON, OLIVER K., M.A., M.B., B.C. Cantab., M.R.C.P. Lond., M.R.C.S. Eng., has been elected Medical Registrar to the Middlesex Hospital.

WOHLMANN, ARTHUR S., M.D., B.S. Lond., has been appointed Official Balneologist to the Government of New Zealand.

Vacancies.

For further information regarding each vacancy reference should be made to the advertisement (see Index).

BETHNAL GREEN INFIRMARY.—Third Assistant Medical Officer. Salary £100 per annum, with apartments, board, and washing.

BOOTLE BOROUGH HOSPITAL, Liverpool.—Junior House Surgeon. Salary £80 per annum, with board, residence, and laundry.

BRADFORD ROYAL INFIRMARY.—Dispensary Surgeon, unmarried. Salary £100 per annum, with board and residence.

BRIDGWATER INFIRMARY.—House Surgeon. Salary £80 a year, with board and residence.

CENTRAL LONDON SICK ASYLUM DISTRICT.—Assistant Medical Officer. Salary £120 per annum, with board and residence.

CITY OF LONDON UNION INFIRMARY.—Assistant Medical Superintendent, single, or widower without children. Salary £150 per annum, with apartments, rations, and washing.

CORNWALL COUNTY ASYLUM, Bodmin.—Junior Assistant Medical Officer, unmarried. Salary £120, rising to £150, with board, apartments, &c.

COSFORD UNION, Suffolk, Bildeston District.—Medical Officer and Public Vaccinator. Salary £72 per annum (exclusive of fees approximating to £76 per annum).

COSFORD UNION WORKHOUSE, Suffolk.—Medical Officer. Salary £50 per annum, with fees.

CUMBERLAND INFIRMARY, Carlisle.—Resident Medical Officer as House Physician for first six months and House Surgeon for ensuing six months. Salary at rate of £80 and £100 per annum respectively, with board, lodging, and washing.

DURBAN, NATAL, SOUTH AFRICA.—Medical Officer of Health. Salary at rate of £750 per annum.

EAST LONDON HOSPITAL FOR CHILDREN AND DISPENSARY FOR WOMEN, Shadwell, E.—Medical Officer for the Electrical Department.

EAST SUSSEX COUNTY ASYLUM, Hayward's Heath.—Second Assistant Medical Officer, unmarried. Salary £200 per annum, with board, lodging, washing, and attendance.

HEREFORDSHIRE GENERAL HOSPITAL.—Assistant House Surgeon. Salary £35, with board and residence.

HOSPITAL FOR CONSUMPTION AND DISEASES OF THE CHEST, Brompton.—Resident House Physicians for six months. Honorarium £25.

HOSPITAL FOR WOMEN, Soho-square.—Clinical Assistants.

JEWISH MUTUAL BIRMINGHAM BENEFIT SOCIETY, Bow-road, E.—Medical Officer.

KENT AND CANTERBURY HOSPITAL.—Surgeon.

LEICESTER INFIRMARY.—Assistant House Surgeon. Salary £80 per annum, with board, apartments, and washing.

LIVERPOOL COUNTY ASYLUM, Rainhill.—Assistant Medical Officer, unmarried. Salary £150 per annum, with prospect of increase, with apartments, board, attendance, and washing.

LIVERPOOL INFIRMARY FOR CHILDREN.—Assistant House Surgeon for six months. Salary £25, with board and lodging.

LIVERPOOL STANLEY HOSPITAL.—Third House Surgeon. Salary £70 per annum, with board, residence, and washing.

NEWCASTLE-ON-TYNE DISPENSARY.—Visiting Medical Assistant. Salary £160, rising to £180.

NORFOLK AND NORWICH HOSPITAL.—House Surgeon, unmarried. Salary £80 per annum, with board, lodging, and washing.

NORTHAMPTON, ST. ANDREW'S HOSPITAL FOR MENTAL DISEASES.—Additional Assistant Medical Officer for six or seven months. Salary 3 guineas a week, with board, lodging, and washing.

NOTTINGHAM GENERAL DISPENSARY.—Assistant Resident Surgeon, unmarried. Salary £160 per annum, increasing by £10 every year, with apartments, attendance, light, and fuel.

OLDHAM INFIRMARY.—Senior House Surgeon. Salary £100 per annum, with board, residence, and washing.

PORTSMOUTH BOROUGH ASYLUM.—Assistant Medical Officer, unmarried. Salary £120 to £156 per annum, with board, lodging, &c.

ROYAL BERKSHIRE HOSPITAL.—Assistant House Surgeon for six months. Salary £60 per annum, with board, lodging, and washing.

ROYAL FREE HOSPITAL, Gray's Inn-road, W.C.—House Physician, also House Surgeon for six months. No salary is given, but board, &c., are provided. Also Clinical Pathologist, salary £75 per annum; Assistant Pathologist, £25 per annum; and Resident House Physician and Resident House Surgeon. (All females). No salary is given to the Resident Officers, but board, &c., are provided.

ROYAL SOUTH HANTS AND SOUTHAMPTON HOSPITAL.—Assistant Physician.

SHEFFIELD ROYAL HOSPITAL.—Five Honorary Assistant Dental Officers.

SHEFFIELD UNIVERSITY COLLEGE.—Demonstrator in Bacteriological Laboratory. Salary £150, rising to £200 per annum.

STOCKPORT INFIRMARY.—Junior Assistant House Surgeon for six months. Salary at rate of £40 per annum, with board, washing, and residence.

STOKE-ON-TRENT INFECTIOUS DISEASES HOSPITAL, Bucknall.—Resident Assistant Medical Officer. Salary £80 per annum, with board, residence, and washing.

TEIGNMOUTH HOSPITAL, S. Devon.—House Surgeon. Salary £70 a year, with board, lodging, and washing.

VICTORIA HOSPITAL, Folkestone.—House Surgeon. Salary £100 per annum, with board, residence, and laundry.

WEST DERBY UNION INFIRMARY, Mill-road, Everton, Liverpool.—Resident Assistant Medical Officer, unmarried. Salary £120 per annum, with rations.

WEST END HOSPITAL FOR NERVOUS DISEASES, Welbeck-street, Cavendish-square, W.—Honorary Dental Surgeon.

WEST LONDON HOSPITAL, Hammersmith-road, W.—Honorary Officer in charge of the X Ray Department.

The Chief Inspector of Factories, Home Office, London, S.W., gives notice of vacancies as Certifying Surgeon, under the Factory Acts, at Portaferry, in the county of Down; at Cushendall, in the county of Antrim; at Blisworth, in the county of Northampton; at Hutton Thornes, in the county of Yorkshire; at Caton, in the county of Lancashire; at Epping, in the county of Essex; at Dromore, in the county of Down; at Scotstown, in the county of Monaghan; at Clay Cross, in the county of Derby; at Alfreton, in the county of Derby; at Saddleworth, in the West Riding of the county of York; and at Chipping Sodbury, in the county of Gloucester.

Births, Marriages, and Deaths.

BIRTHS.

MEAKIN.—On March 25th, at Cambridge, the wife of Captain Harold Meakin, M.D. Lond., Indian Medical Service, of a son.

POWELL.—On March 25th, at The Cottage, Bagshot, the wife of Major Simpson Powell, M.D. Durh., Royal Army Medical Corps, of a daughter.

MARRIAGES.

ADDISON—GRAY.—On Tuesday, March 25th, at Trinity Presbyterian Church, Kensington-park-road, by the Rev. Hugh Falconer, M.A., B.D., Christopher Addison, M.D., F.R.C.S., youngest son of the late Robert Addison, senior, of Stallingboro, Lincolnshire, to Isobel, youngest daughter of the late Archibald Gray, of 37, Holland-park, W., and of Mrs. Gray, St. Mary's Tower, Birnam, Perthshire.

BARNBY—DAVISON.—On April 2nd, at the parish church, Stokesley, Yorkshire, by the Rev. J. Groves, vicar of Redcar, Wm. Henry, L.R.C.P. & S., youngest son of the late John Eager Barnby, Great Yarmouth, to Hilda, second daughter of the late Robert Davison, Southfield Villas, Middlesbro'.

DEATHS.

BROWN.—On March 28th, at Newlands, Crawley Down, Sussex, Robert Brown, F.R.C.S., in his 82nd year.

BRYANT.—On March 22nd, at San Remo, in his 43rd year, Sidney William Bryant, M.D. Edin., M.R.C.S.

FOX.—On March 28th, at Clifton-park, Bristol, Edward Long Fox, M.D. Oxon., F.R.C.P. Lond., aged 70 years.

PRESTON.—On March 16th, at 4, Abercorn-place, N.W., William John Preston, Esq., M.D., aged 82 years.

***N.B.*—A fee of 5s. is charged for the insertion of Notices of Births, Marriages, and Deaths.**

Notes, Short Comments, and Answers to Correspondents.

SCOTTISH POOR-LAW MEDICAL OFFICERS.

THE dispute about the parish of Clyne Poor-law medical officer still continues. A special meeting of the parish council was held on March 25th, at which a letter from the Local Government Board for Scotland was read wherein it was pointed out that a parish council has no concern with its medical officer except in so far as he is medical officer to the paupers under care of the guardians. The parish council, however, could give its medical officer due notice to go at the end of his year of office, and it need not assign any reason for so doing. It was mentioned at the council that a plébiscite of the ratepayers had been taken on the question. The votes were as follows: In favour of Dr. G. Nicoll remaining, 200; against, 14; neutral, 32. Finally, a motion was carried by one vote saying that it was inadvisable for the parish council to interfere but that it was very desirable that Dr. Nicoll should be available as far as could reasonably be expected. The whole position is absurd and arises from the parish council going outside its province. It has a duty to provide medical attendance for paupers, but it is in no way its duty to provide a parochial medical attendant. If the inhabitants of Clyne wish for a medical man to reside in their midst to be entirely devoted to their service they should offer a suitable retaining fee, but even then we doubt whether any self-respecting medical man would consent to put his liberty of action in the hands of such persons as some of the ratepayers of Clyne would appear to be from the published reports of their actions.

THE MEDICINAL PROPERTIES OF SAFFRON.

To the Editors of THE LANCET.

SIRS,—In your issue of Feb. 15th, at page 469, there is a reference to saffron and its properties, in connexion with which the following notes may be of interest to readers of THE LANCET.

Saïdîi Käzerûni (*circ.* 1350 A.D.), in his commentary entitled "Al-Mughni" (*liber sufficiens*), on the "Kânûn" of the famous Ibn Sînâ (Avicenna), writes as follows regarding saffron: "It has a wonderful effect in strengthening the mental faculties, with renewal of their brilliance, and causes exhilaration and cheerfulness. Strong-smelling perfumes are valuable adjuvants."

Again, the "Bahru-l-Jawâher" ("Ocean of Essences") states: "Saffron prevents the flow of moist humours to the eye when used either as an ointment or as a collyrium. It is hot in the third degree, dry in the first degree, laxative and digestive, improves the complexion, and when mixed with wine is very intoxicating, causing heaviness, headache, and drowsiness. It clears the eyesight, facilitates parturition, is a respiratory stimulant and cardiac tonic; is diuretic, controls the animal passions, is of service in internal pains and uterine disorders, dispels the effects of a debauch, is aphrodisiac, and beneficial in diseases of the spleen."

The "Makhzan-al-Adwiya" ("Storehouse of Medicaments") gives the following account of "the properties and actions of saffron." "Exhilarating and tonic to the five senses, excitant and digestive, laxative and corrective of the impure humours arising from the phlegm, preserving them from alteration and corruption. It is diuretic and astringent, aphrodisiac, and stimulant to the animal spirits, is a hepatic and intestinal tonic, and a respiratory stimulant. Its use provokes mirth and laughter, purifies the kidneys, bladder, and skin, and conveys the virtues of other drugs to the heart and all the viscera. It removes obstructions of the brain, liver, and spleen."

If saffron really possesses the qualities claimed for it by Oriental physicians and pharmacologists, we have at once a reason for its use in decoctum aloes compositum, and it is evident that its removal would be a loss.

In any case it is interesting to know that saffron has for more than five centuries possessed a high reputation for efficiency in the above-noted particulars.

I am, Sirs, yours faithfully,

GEORGE RANKING, M.D. Cantab., Lieutenant Colonel I.M.S.

Calcutta, March 6th, 1902.

SADDLE SORENESS.

IN the April number of the *National Cyclists' Union Review* Mr. E. B. Turner, F.R.C.S. Eng., discourses upon "Saddle Soreness, its Causes, Prevention, and Cure." There are plenty of causes but Mr. Turner is fain to confess that there is practically no prevention and no cure. A member of our staff says that from his own experience he can say the same thing. He has tried all sorts of saddles and has finally settled down to one which everyone whom he has asked to try it pronounces to be abominably uncomfortable. The only way to avoid saddle soreness is for the rider to make trials of saddles until he finds one that he likes and has got it properly adjusted. When this desirable consummation has been achieved let him on no account move the saddle. Let him remember, too, that, as Mr. Turner points out, a bicycle must be ridden and not simply sat upon, and he should also remember that no one saddle will fit everyone any more than will a boat, or a gun, or a pair of boots.

INCONTINENCE OF URINE.

To the Editors of THE LANCET.

SIRS,—I shall be glad if anyone who has had successful experience in the treatment of the incontinence of children will inform one of his less fortunate brethren as to the remedies employed. In a case which I have had under my care for a considerable period none of the usual drugs have had any permanent effect. I have tried gradually increasing doses of tincture of belladonna, both alone and in combination with liquor strychniæ but with only temporary relief. As soon as the higher doses are withdrawn the habit returns. As the boy in question is located at a big public school it is, of course, a great drawback to him. I may say that the urine is normal as to reaction and specific gravity. Any hints as to treatment will be gratefully appreciated.

I am, Sirs, yours faithfully,

April 1st, 1902. S. S. B.

PROPOSED MEMORIAL TO THE LATE SURGEON-GENERAL W. NASH, A.M.S.

WE received on April 1st, from Major B. M. Skinner, R.A.M.C., the secretary to the fund for the memorial to Surgeon-General W. Nash, A.M.S., the following list of further subscriptions:—

	£	s.	d.
Surgeon-General J. A. Marston, C.B., K.H.S.	1	1	0
Colonel G. Leake	1	1	0
Colonel H. Comerford ...	1	1	0
Lieutenant-Colonel B. McCreery	0	10	0
Lieutenant-Colonel Odo Cross	1	1	0
Surgeon-General J. L. Jameson	2	2	0
Colonel F. B. Scott, C.M.G.	1	1	0
Colonel W. McWatters ...	1	0	0
Major G. E. Moffet	0	10	0
Surgeon-General J. Jameson, C.B.	1	1	0
Lieutenant-Colonel W. Johnston	1	1	0
Major S. G. Allen	0	5	0
Previously acknowledged in THE LANCET of March 15th (p. 764) and 29th (p. 919)	23	2	0
	£34	16	0

Subscriptions promised should be remitted as stated in THE LANCET of March 15th, p. 764. They will be duly acknowledged.

E. M.—The position of public vaccinators is a very difficult one. Our correspondent will find the matter discussed in an article in THE LANCET of Nov. 16th, 1901, p. 1352. We do not wish to say anything that might check the very necessary wholesale vaccination that is now taking place, though we are quite aware that the methods of some public vaccinators are open to question.

Colonist.—The M.D. Brux. is registrable in Australia and the regulations of the universities there, according to the Australian Medical Directory, make allowances in many cases for work done elsewhere.

A Subscriber for the Last 30 Years.—The matter is one for arrangement. The incomer should receive only his share of the money earned since the date of partnership.

R. W. E.'s verses are to the point, but the subject is just now so fraught with serious issues that we think it well not to deal lightly with it.

COMMUNICATIONS not noticed in our present issue will receive attention in our next.

METEOROLOGICAL READINGS.

(Taken daily at 8.30 a.m. by Steward's Instruments.)

THE LANCET Office, April 3rd, 1902.

Date.	Barometer reduced to Sea Level and 32° F.	Direction of Wind.	Rainfall	Solar Radiation in Vacuo.	Maximum Temp. Shade	Min Temp	Wet Bulb	Dry Bulb.	Remarks at 8.30 A.M.
Mar. 28	29·81	S.W.	...	83	54	47	45	47	Cloudy
,, 29	29·83	S.W.	...	62	56	46	44	46	Cloudy
,, 30	29·93	S.W.	0·05	63	49	46	48	48	Raining
,, 31	29·89	S.W.	0·09	90	45	44	48	49	Cloudy
April 1	29·56	W.	...	68	57	48	48	51	Cloudy
,, 2	29·79	N.W.	...	81	54	39	40	44	Fine
,, 3	29·80	S.W.	...	76	52	42	40	44	Overcast

During the week marked copies of the following newspapers have been received:—*Greenock Herald, Wyndham Farmer (Otago, N.Z.), Redditch Indicator, Surrey Advertiser, Coventry Herald, Belfast News, Birmingham Daily Mail, Municipal Reformer, Echo, Standard, Bristol Mercury, Liverpool Daily Post, Herts Advertiser, Times of India, Reading Mercury, Mining Journal, Local Government Chronicle, Hertfordshire Mercury, Windsor and Eton Express, Portadown News, Sunday Magazine, Kensington News, Daily Telegraph, St. James's Gazette, Pharmaceutical Journal, Manchester Guardian, Dublin Evening Telegraph, Gazette Médicale de Paris, &c.*

Medical Diary for the ensuing Week.

OPERATIONS.

METROPOLITAN HOSPITALS.

MONDAY (7th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), St. George's (2 P.M.), St. Mary's (2.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), Chelsea (2 P.M.), Samaritan (Gynæcological, by Physicians, 2 P.M.), Soho-square (2 P.M.), Royal Orthopædic (2 P.M.), City Orthopædic (4 P.M.), Gt. Northern Central (2.30 P.M.) West London (2.30 P.M.), London Throat (2 P.M.).

TUESDAY (8th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Westminster (2 P.M.), West London (2.30 P.M.), University College (2 P.M.), St. George's (1 P.M.), St. Mary's (1 P.M.), St. Mark's (2.30 P.M.), Cancer (2 P.M.), Metropolitan (2.30 P.M.), London Throat (2 P.M. and 6 P.M.), Royal Ear (3 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.).

WEDNESDAY (9th).—St. Bartholomew's (1.30 P.M.), University College (2 P.M.), Royal Free (2 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. Thomas's (2 P.M.), London (2 P.M.), King's College (2 P.M.), St. George's (Ophthalmic, 1 P.M.), St. Mary's (2 P.M.), National Orthopædic (10 A.M.), St. Peter's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Gt. Ormond-street (9.30 A.M.), Gt. Northern Central (2.30 P.M.), Westminster (2 P.M.), Metropolitan (2.30 P.M.), London Throat (2 P.M.), Cancer (2 P.M.), Throat, Golden-square (9.30 A.M.).

THURSDAY (10th).—St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), University College (2 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), London (2 P.M.), King's College (2 P.M.), Middlesex (1.30 P.M.), St. Mary's (2.30 P.M.), Soho-square (2 P.M.), North-West London (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (Gynæcological, 2.30 P.M.), Metropolitan (2.30 P.M.), London Throat (2 P.M.), St. Mark's (2 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square (9.30 A.M.).

FRIDAY (11th).—London (2 P.M.), St. Bartholomew's (1.30 P.M.), St. Thomas's (3.30 P.M.), Guy's (1.30 P.M.), Middlesex (1.30 P.M.), Charing-cross (3 P.M.), St. George's (1 P.M.), King's College (2 P.M.), St. Mary's (2 P.M.), Ophthalmic (10 A.M.), Cancer (2 P.M.), Chelsea (2 P.M.), Gt. Northern Central (2.30 P.M.), West London (2.30 P.M.), London Throat (2 P.M. and 6 P.M.), Samaritan (9.30 A.M. and 2.30 P.M.), Throat, Golden-square, (9.30 A.M.), City Orthopædic (2.30 P.M.).

SATURDAY (12th).—Royal Free (9 A.M. and 2 P.M.), London (2 P.M.) Middlesex (1.30 P.M.), St. Thomas's (2 P.M.), University College (9.15 A.M.), Charing-cross (2 P.M.), St. George's (1 P.M.), St. Mary's (10 P.M.), London Throat (2 P.M.), Throat, Golden-square (9.30 A.M.).

At the Royal Eye Hospital (2 P.M.), the Royal London Ophthalmic (10 A.M.), the Royal Westminster Ophthalmic (1.30 P.M.), and the Central London Ophthalmic Hospitals operations are performed daily.

SOCIETIES.

TUESDAY (8th).—ROYAL MEDICAL AND CHIRURGICAL SOCIETY (20, Hanover-square, W.).—8.30 P.M. Papers:—Dr. F. J. Poynton and Dr. A. Paine: A Contribution to the Study of Malignant Endocarditis.—Dr. W. Ewart and Mr. A. S. Morley: The Possibility of Recovery from the Active Stage of Malignant Endocarditis (illustrated by cases and specimens).

WEDNESDAY (9th).—DERMATOLOGICAL SOCIETY OF LONDON (11, Chandos-street, Cavendish-square, W.).—5.15 P.M. Demonstration of Cases of Interest.

HUNTERIAN SOCIETY (London Institution, Finsbury Circus, E.C.).—8.30 P.M. Clinical Evening.

THURSDAY (10th).—BRITISH GYNÆCOLOGICAL SOCIETY (20, Hanover-square, W.).—Specimens will be shown by Dr. H. M. Jones. Paper:—Dr. H. Croom: The Secondary Aspects of Deciduoma Malignum.

HARVEIAN SOCIETY OF LONDON (Stafford Rooms, Titchborne-street, Edgware-road, W.).—8.30 P.M. Papers:—Dr. R. Bowles: The Practical Treatment of Functional Vasomotor Disturbances.—Mr. R. Johnson: Some Points in the Treatment of Tuberculous Disease of the Knee.

FRIDAY (11th).—CLINICAL SOCIETY OF LONDON (20, Hanover-square, W.).—8.30 P.M. Papers:—Mr. T. Carwardine: Cases illustrating the Mode of Origin of certain Cysts of the Neck.—Dr. W. J. Tyson: Case of Intestinal Obstruction due to Embolism of a Branch of the Superior Mesenteric Artery.—Mr. A. E. Barker: Cerebellar Abscess with Sudden Paralysis of the Respiratory Centres.—Mr. H. L. Barnard: The Simulation of Acute Peritonitis by Pleuro-pneumonic Disease.

LARYNGOLOGICAL SOCIETY OF LONDON (20, Hanover-square, W.).—5 P.M. Cases and Specimens will be shown by Dr. W. Wingrave, Dr. W. H. Kelson, Dr. StClair Thomson, Mr. A. H. Cheatle, Dr. Lack and others.

INCORPORATED SOCIETY OF MEDICAL OFFICERS OF HEALTH (9, Adelphi-terrace, Strand, W.C.).—7.30 P.M. Discussion on the Tenure of Office of Medical Officers of Health.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

MONDAY (7th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. J. M. H. MacLeod: Clinique. (Skin.)

ROYAL INSTITUTION OF GREAT BRITAIN.—5 P.M. General Monthly Meeting.

TUESDAY (8th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Dr. J. Taylor: Clinique. (Medical.)

WEDNESDAY (9th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. J. Hutchinson, jun., Clinique. (Surgical.)

THE SANITARY INSTITUTE (Parkes Museum, Margaret-street, W.).—8 P.M. Discussion on the Prevention of Malaria (opened by Dr. P. Manson).

THURSDAY (10th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. Hutchinson: Clinique. (Surgical.)

FRIDAY (11th).—MEDICAL GRADUATES' COLLEGE AND POLYCLINIC (22, Chenies-street, W.C.).—4 P.M. Mr. R. Lake: Clinique. (Ear.)

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